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British West Indies Central Sugar Cane Breeding Station, Barbados

TWENTY-SECOND ANNUAL REPORT

For the Year Ending September 30th, 1955

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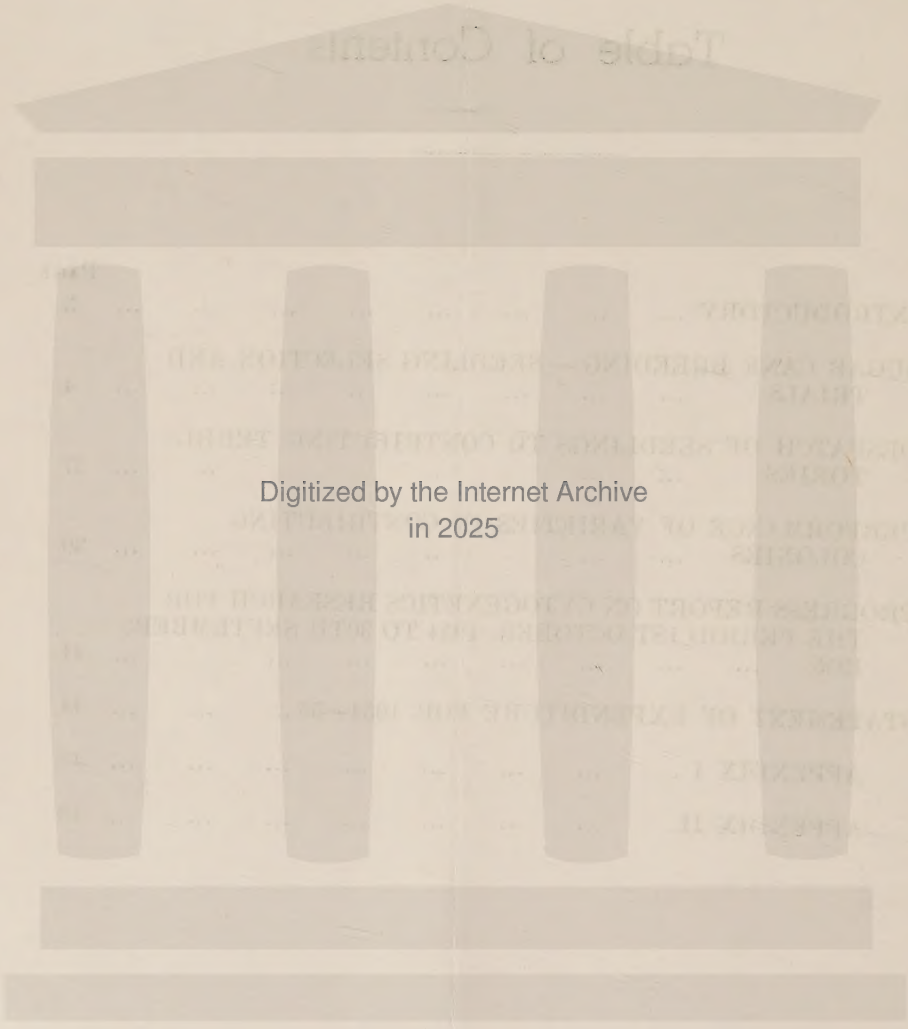

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British West Indies Central Sugar Cane Breeding Station Barbados.

TWENTY-SECOND ANNUAL REPORT FOR THE YEAR ENDING THE 30TH SEPTEMBER, 1955

I. INTRODUCTORY

Staff

Following recommendations made by a sub-committee which had considered proposals for the re-organisation of the Station's work, the Advisory Committee agreed to certain changes in the scientific staff. Mr. G. C. Stevenson, formerly Cytogeneticist, was appointed Senior Geneticist with effect from 18th December, 1954, and was placed in charge of the Station's experimental work and research programme. Funds to cover this appointment for five years on secondment from Her Majesty's Overseas Civil Service, Research Branch, were provided by the B.W.I. Sugar Association.

The Advisory Committee also agreed to the appointment of a Junior Geneticist. The post was advertised in the United Kingdom, Australia and New Zealand, and Mr. D. I. T. Walker was finally selected for appointment. Arrangements were made for the Junior Geneticist to undertake a course with Professor K. Mather, F.R.S., at the University of Birmingham, with special emphasis on biometrical genetics and statistics.

The Breeding Programme

The Provisional Breeding Programme for the 1955 season was drawn up in July 1955. The programme takes the form of a survey of all varieties in the breeding plots, with desirable crosses to be made with each. Only a fraction of the listed crosses can be made, owing to absence of arrowing in some cases, different times of flowering of male and female arrows in others, and lack of breeding equipment for yet others, but the programme represents an essential guide which is consulted freely throughout the breeding season. The main change in policy in formulating the programme has been the incorporation of a considerable proportion of inbred crosses. The justification for this is from the results of cytogenetic research at the Station, and from the success of inbred varieties raised both in Barbados and elsewhere.

In the pure-line breeding work, certain of the derivatives have reached a stage where it is possible to make a preliminary assessment of their breeding value by top-crosses with standard parents, and by inter-line crossing. It is proposed to make such crosses in the 1955 breeding season.

Breeding Methods

Reference has been made in previous reports to the desirability of developing breeding methods more economical than that employing hand-pollination with the standard Barbados breeding lantern. A simpler type of lantern has been devised and proved effective. Some success has been obtained in preserving male arrows in Aretan solution, but pollen-shedding for longer periods is desirable. A number of organic chemicals of the oxidase-inhibitor class has been obtained and will be tested in the coming season for making up preservative solutions. The marcotting method, used successfully at the Canal Point Station in Florida, is mentioned in this Report.

Irrigation of Breeding Plots

Irrigation equipment authorised by the Advisory Committee was put into use in the dry spell of April-June, but water was only available by use of a pump supplied by the Barbados Government Irrigation Board. The situation emphasized the urgent need of an independent and reliable source of water for use by the Station.

Acknowledgments

It is wished to acknowledge the assistance and co-operation received during the year from members of the staff of the Department of Science and Agriculture, Barbados.

II. SUGAR CANE BREEDING—SEEDLING SELECTION AND TRIALS

(i) SUGAR CANE BREEDING—B.57′ SERIES

The usual methods were employed in the controlled crossing of various sugar cane varieties at Groves Agricultural Station from October 1954 to January 1955. Experiments with a new type of lantern which is less cumbersome and cheaper to construct and maintain were also carried out. These new lanterns have proved to be reasonably successful and will be tested further during the coming year. Rainfall during the year was normal and arrowing was reasonably good. One hundred and sixteen crosses were made and twenty-four self or sib-crosses were done for the cytogenetical work. In addition, more than one lantern was used for some crosses in order to increase the quantity of seed of these crosses.

(11) SEEDLING RAISING, POTTING AND PLANTING IN THE FIELD NURSERY — B.57′ SERIES

Germination was the poorest on record. The number of crosses which gave few or no seedlings was unusually large while crosses, which usually give large populations of seedlings, gave relatively few. No explanation can be offered for the exceptionally poor germination, as weather conditions were quite normal, and the usual methods were employed. It is estimated that just under forty-one thousand seedlings germinated, and of these ten thousand two hundred and sixty-five were potted singly, and five thousand three hundred and fifteen in bunches of from five to ten seedlings each.

A compost of 50–50 filter press mud and sterilised soil was used in potting, and this resulted in better growth and less chlorosis in the seedlings in the pot stage.

Table I gives, under group heads, a list of the crosses made, the numbers of seedlings germinated, potted and planted in the Field Nursery, while Appendix I gives these details for all crosses made.

Table I

Number of Crosses and Seedlings in each group germinated, potted singly and in bunches, and planted in the Field Nursery — B.57′ Series.

GROUP	No. of Crosses	No. Germinated	No. Potted		No. Planted in Field Nursery	
			Singles	Bunches of 5—10 Seedlings	Singles	Bunches of 5—10 Seedlings
S. officinarum x S. spontaneum						
1st Nobilisation Tukuyu ...	2	4	4	—	—	—
3rd Nobilisation Glagah ...	1	15	15	—	11	—
3rd Nobilisation Local ...	1	30	30	—	17	—
Noble x Local x Glagah ...	4	4,491	1,121	765	809	760
Noble x Glagah x Celebes ...	2	187	187	—	122	—
Noble x Local x Glagah x Celebes	3	1,715	395	266	321	266
S. officinarum x S. spontaneum x S. barberi						
Noble x Glagah x Chunnee ...	5	1,029	910	25	729	22
Noble x Local x Chunnee ...	4	500	410	13	278	13
Noble x Local x Glagah x Chunnee	42	16,464	4,870	2,505	3,604	2,361
Noble x Local x Celebes x Chunnee	1	—	—	—	—	—
Noble x Local x Glagah x Celebes x Chunnee	12	7,201	1,550	735	1,143	715
S. officinarum x spontaneum x S. barberi x S. sinense						
Noble x Local x Chunnee x Sinense	3	250	200	5	178	5
Noble x Glagah x Chunnnee x Sinense	4	66	66	—	48	—
Noble x Glagah x Celebes x Chunnee x Sinense	2	37	37	—	35	—
Noble x Local x Glagah x Chunnee x Sinense	13	7,873	3,226	1,173	2,189	1,152
S. officinarum x S. spontaneum x S. sinense						
Noble x Glagah x Sinense ...	3	5	5	—	—	—
S. officinarum x S. spontaneum x S. barberi x S. robustum						
Noble x Glagah x Chunnee x Robustum	1	400	290	16	259	16

TABLE I (*Concluded*)

GROUP	No. of Crosses	No. Germinated	No. Potted		No. Planted in Field Nursery	
			Singles	Bunches of 5—10 Seedlings	Singles	Bunches of 5—10 Seedlings
S. officinarum x S. spontaneum x S. robustum						
Noble x Glagah x Robustum	1	260	200	9	193	9
Noble x Celebes x Robustum	1	280	280	—	230	—
Noble x Local x Glagah x Robustum	1	47	47	—	42	—
Position Uncertain at Present ...	2	117	117	—	57	—
TOTALS	108	40,971	13,960	5,512	10,265	5,319

(iii) PLANTING THE FIRST YEAR SEEDLING TRIAL — B.56′ SERIES

The seedlings of this series were planted in the Field Nursery in May 1954. As bunch plantings were included in this series for the first time, a new technique had to be used in selecting the seedlings to be planted in the First Year Seedling Trial. The Botanist and an experienced Field Officer went through the standing canes in the Field Nursery, and selected a single cane from each of the most promising stools of each cross. These were tied in bundles and sent to the field where the First Year Seedling Trial was being planted, to be cut up and planted in the usual way. In the bunch plantings competition had resulted in the elimination of a number of the weaker seedlings, and in a large proportion the stools appeared to have been derived from a single seedling. However, stools with two to four varieties were found, and these could usually be recognised quite readily. Where more than one seedling per stool was found, one cane from each seedling was taken if the canes appeared to the selectors to be worth carrying through the First Year Seedling Stage. As usual canes considered to be too thin for commercial purposes as well as those which flowered or held their trash firmly, were eliminated at this stage, unless the seedlings had been obtained from an early nobilisation and were required for breeding purposes only.

For the first time, stools of a standard variety to be used for purposes of comparison were included at random in these trials. As soil variation at Codrington is appreciable, this procedure should be of much assistance in making selections. Further, with the introduction of stools of a standard variety, the necessity for dividing the First Year Seedling Trial into separate blocks ceases to exist, and in future, the seedlings from each cross will be planted together in a single block.

Four thousand, four hundred and ninety-eight seedlings reached the First Year Seedling Trial from a total of thirteen thousand, eight hundred and thirty-four single and six thousand, nine hundred and eighty-seven bunch plantings in the Field Nursery.

Table II gives, under group heads, a list of the numbers of crosses in each group, and the number of seedlings planted in the First Year Seedling Trial, while Appendix II gives these details for all crosses made.

TABLE II

Number of Crosses and Seedlings in each group planted in the First Year Seedling Trial, October 1954. B.56′ Series

GROUP	No. of Crosses	No. of Seedlings Planted in First Year Trial
S. Officinarum x S. spontaneum		
2nd Glagah Nobilisation	3	30
3rd Glagah Nobilisation	2	86
4th Glagah Nobilisation	2	107
Noble x Glagah x Local	4	372
Noble x Glagah x Local x Celebes	2	67
S. officinarum x S. spontaneum x S. barberi		
Noble x Glagah x Chunnee	7	202
Noble x Glagah x Local x Chunnee	48	2,492
Noble x Chunee x Celebes	1	4
Noble x Glagah x Celebes x Chunnee	2	25
Noble x Glagah x Local c Celebes x Chunnee	5	699
S. officinarum x S. Spontaneum x S. barberi x S. sinense		
Noble x Local x Chunnee x Sinense	1	14
Noble x Glagah x Local x Chunnee x Sinense	7	195
S. officinarum x S. spontaneum x S. robustum		
Noble x Glagah x Robustum	4	117
S. officinarum x S. spontaneum x S. barberi		
Noble x Glagah x Local x Chunnee x Robustum	2	66
S. officinarum x S. barberi x S. robustum		
Noble x Chunnee x Robustum	1	22
GRAND TOTALS	91	4,498

(iv) RESULTS OF REAPING THE FIRST YEAR SEEDLING TRIALS — B.55′ SERIES

These seedlings were bred in 1952, planted in the Field Nursery in May 1953, and from this into the First Year Seedling Trial in October of the same year. They were cut during the past crop season.

As in previous years, the seedlings of each cross were cut, cleaned, bundled and laid out for inspection. Selection was made initially on appearance and later, on the usual data obtained from each selected bundle.

Three hundred and seventy-one seedlings were selected, and these have been planted in ten-stool multiplication plots under irrigation at Codrington Experiment Station.

Table III gives details of the Field and Final Selections from each cross.

Table III

First Year Seedlings — B.55' Series Field and Final Selections

CROSS	No. of Seedlings Reaped	No. Field Selected	% Field Selection	No. Final Selection	% Final Selection
Ba.11569 x B.40123	5	—	—	—	—
Ba.11569 x B.45301	9	1	11	1	11
B.3353 x B.37193	50	3	6	1	2
B.3353 x B.40175	51	4	8	2	4
B.3353 x B.41227	70	1	1	—	—
B.3353 x B.42231	71	2	2	1	1
B.3365 x B.603	60	1	2	—	—
B.3365 x B.34104	80	5	6	3	4
B.3439 x B.3337	111	12	11	9	8
B.3439 x B.40123	35	1	3	1	3
B.3439 x B.41227	94	8	9	6	6
B.3439 x B.4306	50	5	10	1	2
B.3439 x B.43346	63	8	13	3	5
B.3439 x B.45237 ...	70	13	19	9	13
B.3439 x B.46136	150	6	4	3	2
B.3439 x B.4744	10	3	30	3	30
B.3439 x B.47157	99	1	1	1	1
B.3439 x B.47198	104	1	1	1	1
B.3439 x B.47199	29	1	3	—	—
B.3439 x B.47310	40	2	5	—	—
B.3439 x B.47419	220	16	7	3	1
B.3439 x B.48177	50	5	10	4	8
B.3439 x Co.290	90	10	11	4	4
B.34102 x B.34104	50	5	10	2	4
B.35207 x B.42231	37	4	11	2	5
B.35207 x P.O.J.2878 ...	225	14	6	6	2
B.37161 x B.34104	20	1	5	—	—
B.37161 x B.4098	322	16	5	9	3
B.37161 x B.41211	120	16	13	6	5
B.37161 x B.41227	80	3	4	1	1
B.37161 x B.43391	7	—	—	—	—
B.37161 x B.47419	120	13	11	8	7
B.37161 x P.O.J.2878 ...	32	3	9	2	6
B.37172 x B.37193	89	11	12	4	4
B.37172 x B.41211	30	6	20	6	20
B.37172 x B.47419	52	2	4	2	4
B.39207 x B.4098	5	—	—	—	—
B.39207 x B.41211	198	14	7	6	3
B.39207 x B.41227	20	—	—	—	—
B.39207 x B.4743	99	6	6	2	2
B.39207 x P.O.J.2878 ...	173	13	8	4	2
B.39254 x B.34104	20	2	10	1	5
B.39254 x B.4738	15	1	7	1	7
B.39254 x B.4744	4	—	—	—	—
B.39254 x B.47419	30	1	3	1	3
B.4094 x B.41211	10	2	20	—	—
B.4094 x B.41227	5	2	40	2	40
B.4145 x B.34104	140	8	6	6	4
B.4145 x B.37175	11	—	—	—	—
B.4145 x B.37193	75	9	12	3	4
B.4145 x B.37256	10	—	—	—	—
B.4145 x B.39178	84	2	2	2	2
B.4145 x B.4098	106	2	2	1	1
B.4145 x B.41211	437	37	8	18	4
B.4145 x B.41227	388	23	6	10	3

TABLE III (*Concluded*)

CROSS	No. of Seedlings Reaped	No. Field Selected	% Field Selection	No. Final Selection	% Final Selection
B.4145 x B.4744	28	5	18	3	11
B.4145 x B.47419	270	13	5	4	1
B.4145 x P.O.J.2878 ...	100	—	—	—	—
B.42304 x B.34104	64	1	2	1	2
B.42304 x B.37193	177	21	12	13	7
B.4362 x B.34104	71	5	7	4	5
B.4362 x B.37193	120	4	3	1	1
B.4362 x B.37198	70	4	6	1	1
B.4362 x B.4098	311	26	8	17	5
B.4362 x B.40102	35	2	6	2	6
B.4362 x B. 40175. ...	80	4	5	3	4
B.4362 x B.42231	237	16	7	13	5
B.4362 x B.46397	8	2	25	2	25
B.4362 x B.4744	75	9	12	6	8
B.4362 x B.47320	140	14	10	5	4
B.4362 x B.47419	420	22	5	10	2
B.4362 x B.4847	98	8	8	4	4
B.4362 x Co. 419	16	1	6	—	—
B.4362 P.O.J.2878	200	8	4	5	3
B.4373 x B.39220	24	—	—	—	—
B.4373 x P.O.J.2878 ...	110	9	8	4	4
B.43283 x B.41227	53	3	6	2	4
B.43349 x P.O.J.2878 ...	39	6	15	3	8
B.44261 x B.603	10	1	10	1	10
B.4558 x P.O.J.2878 ...	40	3	8	1	3
B.45152 x B.37175	20	2	10	1	5
B.45152 x B.4098	40	5	13	5	13
B.45170 x P.O.J.2878 ...	92	5	5	1	1
B.46199 x B.37193	6	—	—	—	—
B.4726 x B.42231	30	4	13	1	3
B.4733 x B.42231	22	7	32	3	14
B.47179 x P.O.J.2878 ...	53	1	2	—	—
B.48330 x B.34104	100	4	4	3	3
B.48330 x B.41211	100	1	1	—	—
B.48330 x B.42231	200	13	7	5	3
B.48330 x Co.290	112	11	10	10	9
B.48330 x P.O.J.2878 ...	60	1	2	1	2
B.50151 x B.4098	45	4	9	1	2
B.50151 x B.41227	71	6	8	2	3
B.50235 x B.4098	100	1	1	—	—
B.50235 x B.41227	100	6	6	2	2
Co.421 x B.37193	161	13	8	7	4
Co.421 x B.4098	261	26	10	10	4
Co.421 x B.41211	299	37	12	21	7
Co.421 x B.43375	246	16	7	6	2
Co.421 x B.46223	150	4	3	3	2
Co.421 x B.46397	160	20	13	10	6
P.O.J.2878 x B.34104	45	2	2	2	2

(v) PROGRESS WITH SEEDLINGS OF B.54′ SERIES

The two hundred and ninety seedlings of this series were subjected to a minor selection in October 1954, when the number was reduced to one hundred and seventy-one. These were planted in the Second Year Seedling Trials at the low rainfall Station, Codrington (two trials) and in duplicate trials at the high rainfall stations, Todds and Colleton.

(vi) PROGRESS WITH SEEDLINGS OF THE B.53′ SERIES

The selections of this series were cut as plant canes in Second Year Seedling Trials at the low rainfall station, Codrington (two trials) and in duplicate trials at the high rainfall stations, Guinea and Henley. The trial at Guinea was severely damaged by rats, so that selection was very difficult, particularly as these pests confined their attention to certain varieties only, and these did not include the standard varieties. This trial will be cut and a further selection made from the first ratoon crop. Twenty selections were made from these trials, of which eight will be tested further in Barbados and in October selected consignments will be sent to contributing Colonies.

The performances of selected seedlings together with those of the standard varieties are given in Tables IV and V.

TABLE IV

Second Year Seedling Trials—Plant Canes—B.53′ Series

Codrington: Cut—2nd and 3rd February, 1955

Guinea: Cut—9th, 10th, 11th and 14th March, 1955

SEEDLING	PARENTAGE	No. of Canes per Plot (Rotten)		% Arrowing		Z.H.R. Brix		Mean Yield Tons Cane per Acre	
		Codrington	Guinea	Codrington	Guinea	Codrington	Guinea	Codrington	Guinea
GROUP II									
B.37161 ...	Standard ...	122(0)	158(16)	—	22	20.2	18.9	32.83	53.84
B.4744 ...	Standard ...	127(3)	186(15)	—	—	21.8	18.8	32.74	74.30
B.5321 ...	B.3439 x B.45151	79(0)	157(14)	—	—	18.9	18.4	17.95	65.79
B.5336 ...	B.34102 x B.3337	101(1)	178(13)	—	—	19.7	19.1	21.70	65.28
GROUP III									
B.37161 ...	Standard ...	100(1)	160(16)	2	7	18.0	19.0	31.39	63.47
B.4744 ...	Standard ...	143(4)	198(14)	—	14	19.0	19.7	38.21	81.27
B.5352 ...	B.35207 x P.O.J.2878	132(4)	181(2)	—	—	18.5	20.0	30.91	66.82
B.5387 ...	B.37172 x B.42231	100(6)	163(10)	18	15	19.6	20.4	23.81	62.95
GROUP IV									
B.37161 ...	Standard ...	90(3)	126(26)	3	7	19.9	17.5	31.68	57.10
B.4744 ...	Standard ...	124(2)	169(11)	—	3	20.7	17.7	32.74	81.53
B.5398 ...	B.39157 x B.4098	84(5)	171(26)	—	2	20.7	18.2	26.02	69.83
B.53122 ...	B.4145 x B.4098	96(2)	183(22)	—	5	20.1	19.4	23.90	65.02
GROUP VI									
B.37161 ...	Standard ...	110(0)	153(22)	—	20	20.0	19.5	38.78	51.94
B.4744 ...	Standard ...	144(0)	191(16)	—	1	20.8	20.3	42.26	74.13
B.53165 ...	B.43283 x B.41227	123(5)	131(10)	4	1	19.7	17.9	26.02	60.97
GROUP VII									
B.37161 ...	Standard ...	110(3)	138(10)	—	16	20.0	19.1	32.64	64.67
B.4744 ...	Standard ...	126(0)	191(24)	—	6	20.7	18.0	34.46	82.13
B.53200 ...	Co.421 x B.41211	145(1)	105(62)	4	6	21.0	20.5	35.71	32.94

TABLE V

Second Year Seedling Trials—Plant Canes—B.53' Series

Codrington: Cut— 4h and 7th February, 1955

Henley: Cut—15th and 17th March, 1955

Seedling	Parentage	No. of Canes per Plot (Rotten)		% Arrowing		Z.H.R. Brix		Mean Yield Tons Cane per Acre	
		Codrington	Henley	Codrington	Henley	Codrington	Henley	Codrington	Henley
GROUP VIII									
B.37161 ...	Standard ...	93(1)	152(8)	—	53	21.4	20.2	28.51	46.10
B.4744 ...	Standard ...	121(1)	161(5)	—	13	21.3	21.0	33.31	53.58
B.53218 ...	B.3439 x B.45151	139(2)	147(6)	25	65	21.7	21.2	34.56	43.09
B.53227 ...	B.37161 x B.4098	103(0)	148(4)	—	—	21.4	20.6	26.59	51.17
GROUP IX									
B.37161 ...	Standard ...	104(2)	124(4)	—	10	20.5	20.6	26.11	41.79
B.4744 ...	Standard ...	130(2)	144(6)	—	2	20.5	21.3	33.41	50.31
B.53261 ...	B.4362 x B.4098	118(2)	128(2)	—	11	20.5	21.2	23.52	45.58
B.53267 ...	B.4362 x B.4098	125(1)	187(8)	14	24	21.5	22.0	22.94	48.85
GROUP XI									
B.37161 ...	Standard ...	114(4)	141(6)	—	22	19.5	20.6	32.64	48.25
B.4744 ...	Standard ...	132(3)	155(6)	—	11	20.7	20.8	38.69	59.08
B.53313 ...	B.35207 x P.O.J.2878	108(3)	146(7)	28	50	18.9	19.4	22.83	48.50
B.53317 ...	B.37172 x B.4098	138(2)	162(8)	—	2	20.0	21.8	28.80	52.63
B.53320 ...	B.39157 x B.4098	90(2)	130(4)	—	1	19.7	22.6	27.26	45.15
B.53329 ...	B.4145 x B.4098	126(4)	144(3)	—	2	20.7	22.5	22.08	48.50
GROUP XII									
B.37161 ...	Standard ...	86(2)	139(5)	—	13	20.8	20.4	28.90	38.36
B.4744 ...	Standard ...	148(2)	157(7)	—	14	21.8	20.9	42.91	55.81
B.53348 ...	B.4362 x B.4098	126(6)	181(8)	—	14	23.2	22.2	39.17	45.15
B.53355 ...	B.4502 x B.45151	108(1)	140(11)	—	7	20.8	23.3	20.74	39.04
B.53362 ...	Co.421 x B.41211	140(0)	184(8)	4	5	20.0	20.5	34.85	48.59
GROUP XIII									
B.37161 ...	Standard ...	84(1)	127(6)	—	25	20.6	20.0	27.26	45.49
B.4744 ...	Standard ...	158(0)	152(8)	—	11	21.0	21.5	41.28	62.52
B.53365 ...	Co.421 x B.41211	108(1)	152(5)	—	52	21.3	23.5	26.59	48.07

(vii) PROGRESS WITH SEEDLINGS OF THE B.52' SERIES

These seedlings were cut as first ratoons in Second Year Seedling Trials at the high rainfall stations, Fisherpond and Clifton Hall during the past crop season. The ratoon yields with two exceptions were satisfactory. The performances of the selected seedlings together with those of the standard varieties are given in Tables VI and VII.

Table VI

Second Year Seedling Trials—First Ratoons—B.52' Series

Fisherpond: Cut—29th—31st March, 1955

Seedling	Parentage	No. of Canes per Plot (Rotten))	% Arrows	Z.H.R. Brix	Tons Cane per Acre
GROUP I					
B.37161 ...	Standard ...	187(10)	23	20.4	55.90
B.4744 ...	Standard ...	198(9)	1	21.5	62.09
B.5212 ...	B.37161 x B.4098 ...	159(15)	—	22.8	50.83
B.5213 ...	B.37161 x B.4098 ...	165(14)	1	20.1	54.95
GROUP II					
B.37161 ...	Standard ...	178(9)	13	21.1	55.04
B.4744 ...	Standard ...	179(13)	5	22.0	58.31
B.5235 ...	B.4362 x B.42235 ...	167(19)	1	20.7	62.78
GROUP III					
B.37161 ...	Standard ...	180(12)	12	21.5	49.79
B.4744 ...	Standard ...	178(19)	5	20.2	50.48
B.5246 ...	Co.421 x B.41211 ...	211(10)	27	22.1	62.18
GROUP IV					
B.37161 ...	Standard ...	142(5)	11	21.6	38.27
B.4744 ...	Standard ...	150(9)	5	22.2	53.23
B.5274 ...	B.37161 x B.40102 ...	186(9)	24	21.3	45.75
B.5277 ...	B.37161 x B.42231 ...	153(5)	2	23.5	49.97
B.5284 ...	B.43283 x B.41227 ...	140(4)	8	22.4	54.61
GROUP V					
B.37161 ...	Standard ...	148(7)	25	21.5	46.61
B.4744 ...	Standard ...	159(15)	1	20.6	52.46
B.52107 ...	B.4145 x B.41227 ...	156(4)	—	21.6	56.74
GROUP VI ...					
B.37161 ...	Standard ...	149(8)	18	20.6	44.20
B.4744 ...	Standard ...	162(7)	5	22.1	35.90
B.52135 ...	B.37161 x B.34104 ...	180(9)	5	20.5	39.65
B.52144 ...	B.37161 x B.4098 ...	162(20)	4	19.0	53.32
GROUP VII					
B.37161 ...	Standard ...	155(6)	12	20.8	45.08
B.4744 ...	Standard ...	174(17)	3	21.3	46.78
B.52158 ...	B.37161 x B.41227 ...	227(30)	—	21.4	49.28
B.52162 ...	B.37161 x B.41227 ...	177(10)	2	21.3	47.56
B.52178 ...	B.37172 x B.4098 ...	142(28)	8	22.0	37.60

TABLE VII

Second Year Seedling Trials—First Ratoons—B.52' Series
Clifton Hall: Cut—1st, 4th and 5th April, 1955

SEEDLING	PARENTAGE	No. of Canes per Plot (Rotten))	% Arrows	Z.H.R. Brix	Tons Cane per Acre
Group VIII					
B.37161 ...	Standard ...	159(12)	43	20.4	59.77
B.4744 ...	Standard ...	165(16)	1	20.8	62.95
B.52184 ...	B.37172 x B.41227 ...	140(16)	1	21.1	46.53
GROUP IX					
B.37161 ...	Standard ...	126(9)	34	19.5	50.40
B.4744 ...	Standard ...	179(14)	3	19.1	69.92
B.52213 ...	B.4145 x B.4098 ...	113(22)	9	18.7	43.00
B.52214 ...	B.4145 x B.4098 ...	160(17)	—	19.2	64.24
B.52218 ...	B.4145 x B.4098 ...	174(8)	4	18.0	62.35
B.52222 ...	B.4145 x B.45105 ...	174(10)	9	19.6	72.50
B.52226 ...	B.4145 x B.41227 ...	173(10)	—	18.5	55.13
GROUP X					
B.37161 ...	Standard ...	147(6)	28	19.5	49.97
B.4744 ...	Standard ...	179(8)	8	21.0	66.31
B.52239 ...	B.4362 x B.4098 ...	139(11)	—	19.7	46.18
B.52242 ...	B.4362 x B.4098 ...	219(16)	10	19.7	46.01
B.52253 ...	B.43283 x B.41227 ...	184(9)	—	21.0	52.20
B.52255 ...	B.43283 x B.41227 ...	255(6)	5	22.1	67.25
B.52256 ...	B.43283 x B.41227 ...	229(13)	—	19.8	55.81
B.52257 ...	B.43283 x B.41227 ...	200(7)	4	20.2	39.47
GROUP XI					
B.37161 ...	Standard ...	154(11)	13	19.6	46.53
B.4744 ...	Standard ...	194(22)	3	19.9	71.38
B.52269 ...	B.4558 x B.4098 ...	191(11)	12	20.0	60.03
GROUP XII					
B.37161 ...	Standard ...	132(4)	11	19.7	40.51
B.4744 ...	Standard ...	155(13)	—	20.6	50.31
B.52298 ...	Co.421 x B.41211 ...	172(5)	11	21.2	57.62
B.52304 ...	Co.421 x B.41211 ...	207(3)	5	18.8	60.11
B.52306 ...	Co.421 x B.41211 ...	246(4)	11	19.1	71.12
B.52308 ...	Co.421 x B.41211 ...	214(4)	—	18.8	66.05
B.52313 ...	Co.421 x B.41227 ...	273(14)	64	21.6	59.08
B.52315 ...	Co.421 x B.41227 ...	184(4)	6	20.2	62.18
B.52316 ...	Co.421 x B.41227 ...	182(5)	—	19.3	60.20
B.52321 ...	Co.421 x B.41227 ...	187(3)	1	21.6	61.15
GROUP XIII					
B.37161 ...	Standard ...	162(20)	25	20.4	58.57
B.4744 ...	Standard ...	235(8)	—	21.8	94.10
B.52338 ...	B.37161 x B.43214 ...	194(6)	62	20.6	55.21
B.52341 ...	B.37172 x B.4098 ...	195(10)	—	20.0	61.58
GROUP XIV					
B.37161 ...	Standard ...	149(11)	36	20.7	50.40
B.4744 ...	Standard ...	166(13)	4	20.4	62.61
B.52371 ...	B.43283 x B.41227 ...	166(7)	19	21.8	66.05
B.52389 ...	Co.421 x B.4098 ...	276(9)	6	18.8	85.40

The seedlings of this series which were considered to be most suitable for Barbados conditions were multiplied at Codrington Experiment Station and planted in Third Year Seedling Trials during November, 1954.

(viii) PROGRESS WITH SEEDLINGS OF THE B.51′ AND EARLIER SERIES

Third Year and Select Seedling Trials

A. The Seedlings Tested

1. Third Year Seedling Trial

Plant Canes:— B.5124, B.5143, B.51116, B.51129, B.51156, B.51167, B.51168, B.51183, B.51190, B.51192, B.51211, B.51259, B.51311, B.51321, B.51353 and B.51355.

First Ratoons:— B.49119, B.5011, B.5028, B.5037, B.5047, B.5098, B.50109, B.50112, B.50115, B.50153, B.50166, B.50210, B.50267, B.50268, B.50275, B.50311, B.50347 and B.50377.

2. Select Seedling Trials

First Ratoons:— B.37161, B.46364, B.4738, B.4744, B.47380 and B.47419.

Second Ratoons:— B.37161, B.41211, B.45151, B.4744 and B.47419.

B. An Ecological Classification of the Trials

This classification was proposed by Turner after a study of the sugar cane soils of the British West Indian Colonies, and is as follows:—

Group I:— Soils with a natural tilth and free natural drainage which require neither to be ploughed nor drained.

Group II:— Soils with a tilth which can be improved by ploughing, but which do not require drainage.

(a) Low Rainfall Areas

Third Year Seedling Trials

Plant Canes	...	...	...	...	Mangrove
First Ratoons	...	...	...	...	Bromefield

Select Seedling Trials

First Ratoons	...	...	...	...	Hope

(b) Intermediate Rainfall Areas

Third Year Seedling Trials

Plant Canes	...	...	...	...	Foursquare & Ridge
First Ratoons	...	...	,,,	,,,	Hanson & Belle

Select Seedling Trials

First Ratoons	Hannays & Friendship
Second Ratoons	Searles

(c) High Rainfall Areas

Third Year Seedling Trials

Plant Canes	Orange Hill & Hothersal
First Ratoons	Portland & Wakefield

Select Seedling Trials

First Ratoons	Drax Hall & Mt. Brevitor
Second Ratoons	Applewhaites & Bowmanston

Group III:— Soils which require to be drained, but are preferably left unploughed.

Group IV:— Soils with a poor natural tilth in which a tilth can be created by ploughing, but which require to be drained to maintain their tilth.

(b) Intermediate Rainfall Areas

Third Year Seedling Trials

Plant Canes	Boarded Hall
First Ratoons	Carrington

Select Seedling Trials

First Ratoons	Bulkeley
Second Ratoons	Bulkeley

C. Rainfall During the Seasons

Table VIII

Month	1932—33 to 1951—52	1952—53	1953—54	1954—55
January	3.28	0.65	3.35	4.84
February	2.19	0.58	2.11	2.50
March	1.69	2.64	2.04	1.83
April	2.21	2.84	0.91	4.06
May	3.05	3.04	2.44	2.28
June	4.75	5.38	5.28	4.95
July	6.42	5.67	9.52	4.18
August	7.39	3.47	8.74	2.84
September	7.59	7.21	11.15	9.55
October	8.04	9.07	4.93	12.70
November	9.01	7.48	10.18	7.80
December	4.87	3.54	5.53	4.44
January	3.10	3.35	4.84	2.55
February	2.16	2.11	2.50	1.67
March	1.70	2.04	1.83	0.67
Totals	67.45	59.07	75.35	66.86

Rainfall was below average during the past growing season. However, distribution was reasonably good, and a crop of just over 171,000 tons was made. The dry weather experienced from the middle of December, 1954, resulted in very good ripening conditions and juices were consequently good. The new variety, B.49119, performed exceptionally well under the prevailing conditions, but B.4744 suffered during dry spells, particularly in the low rainfall areas.

TABLE IX

Soil Type—Group II(a) Third Year Seedling Trials—Plant Canes Mangrove—Cut—10th & 11th February, 1955

VARIETY	Tons Cane per Acre	Z.H.R. Brix	% Sucrose in Juice	Purity	No. of Rotten Cnaes per Plot
B.37161 ...	33.83	20.9	19.3	94.6	10
B.4744	36.46	21.7	19.4	92.1	6
B.5124	28.38	21.5	19.4	91.3	14
B.5143	33.59	19.4	16.8	88.4	7
B.51116 ...	26.52	20.0	19.6	91.8	9
B.51129 ...	31.07	21.2	20.0	90.5	6
B.51156 ...	27.66	19.6	17.0	87.0	5
B.51167 ...	26.93	20.2	18.5	90.9	5
B.51168 ...	32.27	20.9	19.3	92.7	7
B.51183 ...	32.93	20.0	18.2	90.7	5
B.51190 ...	24.62	20.3	18.3	90.5	11
B.51192 ...	28.41	19.9	18.5	90.6	5
B.51211 ...	29.23	21.4	19.0	91.5	11
B.51259 ...	26.91	21.5	19.3	89.4	11
B.51311 ...	33.33	20.5	18.8	90.2	2
B.51321 ...	33.77	20.7	18.9	90.8	5
B.51353 ...	36.88	18.7	16.8	87.2	10
B.51355 ...	33.31	19.4	17.5	88.8	5

A difference of $\pm$ 4.10 tons cane per acre may be considered significant.

In this trial, B.51353 gave the heaviest yield of plant cane followed closely by B.4744, B.37161, B.51321, B.5143, B.51311 and B.51355. The juices of B.5143, B.51353 and B.51355 were so poor that they cannot be considered for commercial cultivation. The standard varieties, B.4744 and B.37161, are therefore left as the most outstanding varieties of this trial, although they did not significantly outyield the other varieties mentioned above. The variety, B.51129, gave the best juice quality, but was not particularly outstanding in this respect.

TABLE X

Soil Type:—Group II(c)—Third Year Seedling Trials—First Ratoons
Bromefield — Cut — 17th and 18th February, 1955

VARIETY	TONS CANE PER ACRE			Z.H.R. BRIX			% SUCROSE IN JUICE			PURITY			NO. OF ROTTEN CANES PER PLOT		
	Plant Canes	1st Rtns.	Mean	Plant Canes	1st Rtns.	Mean	Plant Canes	1st Rtns.	Mean	Plant Canes	1st Rtns.	Mean	Plant Canes	1st Rtns.	Mean
B.37161 ...	39.53	34.64	37.09	18.5	19.1	18.8	16.7	18.2	17.5	90.4	91.6	91.0	11	2	7
B.4744 ...	49.28	38.30	43.79	19.2	19.6	19.4	17.1	17.1	17.1	90.6	87.0	88.8	9	5	7
B.49119 ...	48.41	48.29	48.35	19.6	20.1	19.9	17.3	17.4	17.4	90.4	86.4	88.4	7	3	5
B.5011 ...	37.04	36.56	36.80	20.7	21.3	21.0	17.9	18.2	18.1	89.4	84.3	86.9	18	4	11
B.5028 ...	42.00	36.79	39.40	18.9	19.7	19.3	17.8	18.0	17.9	90.9	87.4	89.2	15	2	9
B.5037 ...	40.38	37.65	39.02	19.6	20.1	19.9	17.3	18.8	18.1	90.8	91.2	91.0	9	3	6
B.5047 ...	36.98	32.34	34.66	19.0	19.6	19.3	15.5	17.3	16.4	87.7	84.2	86.0	11	6	9
B.5098 ...	44.86	33.69	39.28	18.2	17.6	17.9	16.1	15.5	15.8	88.3	82.6	85.5	12	5	9
B.50109 ...	39.23	33.36	36.30	18.4	19.2	18.8	16.7	16.9	16.8	90.9	87.1	89.0	39	4	22
B.50112 ...	42.23	40.45	41.34	19.9	19.2	19.6	17.3	17.5	17.4	91.0	87.2	89.1	9	3	6
B.50115 ...	39.00	30.76	34.88	17.8	16.9	17.3	15.1	14.6	14.9	86.2	83.6	84.9	16	7	12
B.50153 ...	40.11	33.93	37.02	19.6	20.2	19.9	17.3	18.1	17.7	91.0	88.4	89.7	21	8	15
B.50163 ...	38.33	32.05	35.19	17.9	18.9	18.4	16.7	16.5	16.6	90.6	88.5	89.6	11	4	8
B.50210 ...	41.30	39.39	40.35	19.1	19.1	19.1	17.1	17.0	17.1	88.7	85.6	87.2	12	3	8
B.50267 ...	40.73	36.37	38.55	19.2	18.7	19.0	16.9	17.3	17.1	89.8	88.1	89.0	26	8	17
B.50268 ...	38.58	36.66	37.62	18.7	17.9	18.3	15.3	15.6	15.5	87.6	86.0	86.8	45	8	27
B.50275 ...	45.29	34.58	39.94	18.9	18.6	18.8	15.6	16.4	16.0	88.7	86.0	87.4	33	6	20
B.50311 ...	41.73	36.90	39.32	18.8	18.0	18.4	16.0	17.0	16.5	88.7	86.9	87.8	11	4	8
B.50347 ...	47.51	38.64	43.08	18.8	19.0	18.9	16.2	16.1	16.2	88.9	85.1	87.0	10	2	6
B.50377 ...	38.91	41.18	40.05	20.8	21.6	21.2	17.0	18.9	18.0	89.0	90.0	89.5	7	2	5

A difference of ± 4.39 tons cane per acre may be considered significant.

In this trial, the variety B.49119 significantly outyielded all other varieties tried. It was followed by B.50377, B.50112 and B.4744. Taking the yields over the two crops, B.49119 has more than made up for its smaller plant cane yield and has now established an average lead of some 4.5 tons on its nearest rival B.4744. B.50112 has also given a reasonably good yield of cane, particularly as a ratoon, and has quite a good juice. It is recumbent, and does not drop its trash particularly well. B.50377 has also performed well, especially as a ratoon. However, this variety, although possessing an outstanding juice, arrows too freely to be acceptable in Barbados.

TABLE XI

Soil Type:—Group II(a)—Select Seedling Trials—First Ratoons
Hope — Cut — 16th February, 1955

VARIETY	TONS CANE PER ACRE			TONS SUGAR PER ACRE			% SUCROSE IN CANE			PURITY			NO. OF ROTTEN CANES PER PLOT		
	Plant Canes	1st Rtns.	Mean	Plant Canes	1st Rtns.	Mean	Plant Canes	1st Rtns.	Mean	Plant Canes	1st Rtns.	Mean	Plant Canes	1st Rtns.	Mean
B.37161 ...	32.56	25.03	28.80	4.85	3.67	4.26	14.9	16.0	15.5	92.5	91.9	92.2	17	7	12
B.4738 ...	34.92	23.42	29.17	5.36	3.39	4.38	15.4	16.2	15.8	90.9	89.5	90.2	13	7	10
B.4744 ...	38.37	17.27	27.82	6.02	2.46	4.24	15.7	15.8	15.8	90.8	89.8	90.3	13	9	11
B.47419 ...	38.20	20.88	29.54	5.82	3.16	4.49	15.2	16.8	16.0	90.5	90.1	90.3	17	9	13

A difference of ± 5.25 tons cane per acre may be considered significant. The differences between the mean yields of sugar cannot be shown to be significant.

In this trial, the guard rows and first row of plots on the windward side of the field were severely affected by sea blast. Cane yields varied greatly from plot to plot, and it is not surprising that there was no significant difference between sugar yields, while the difference required for significance between mean yields of cane was relatively high.

B.37161 gave the heaviest yield of cane under the conditions of this trial, and was significantly better than B.4744. B.4738 was also significantly better than B.4744. Taking the mean yields over the two crops, B.47419 has given the heaviest yield of cane followed by B.4738, B.37161 and B.4744.

B.37161 gave the heaviest yield of ratoon sugar followed by B.4738 and B.47419. However, the differences between the mean sugar yields cannot be shown to be significant. Over the two crops, B.47419 has given the heaviest yield of sugar, closely followed by B.4738 and B.37161. However, there was very little to choose between the mean sugar yields of any of the varieties tried.

B.47419 had the best sucrose content in the ratoon crop and was best over the two crops.

B.37161 gave juice with the highest purity. However, the juice purities of all varieties tried were quite satisfactory. Little rotten cane was found in any of the varieties.

TABLE XII

Soil Type:—Group II(b) Third Year Seedling Trials—Plant Canes
Foursquare — Cut — 14th and 15th February, 1955
Ridge — Cut — 25th and 28th February, 1955

Variety	Tons Cane per Acre		Z.H.R. Brix		% Sucrose in Juice		Purity		No. of Rotten Canes per Plot	
	Four-square	Ridge	Four-square	Ridge	Four-square	Ridge	Four-square	Ridge	Four-square	Ridge
B.37161...	50.14	39.19	19.7	20.3	18.2	18.5	92.6	90.8	8	6
B.4744 ...	55.69	52.43	22.3	20.9	19.7	18.3	92.2	89.6	10	6
B.5124 ...	51.32	43.60	21.7	21.9	20.4	19.1	92.4	91.5	7	4
B.5143 ...	52.10	41.11	19.0	19.5	17.3	16.7	89.3	86.2	13	4
B.51116...	44.73	39.86	20.9	20.1	20.5	19.0	92.1	90.2	18	19
B.51129...	44.07	44.75	22.3	21.6	20.9	19.9	93.1	91.3	14	9
B.51156...	40.43	46.80	19.6	19.6	15.8	17.2	84.0	85.4	6	9
B.51167...	47.51	42.34	19.3	18.5	18.2	17.5	91.1	88.8	9	34
B.51168...	51.00	47.11	20.3	19.2	18.7	18.6	92.0	91.3	13	9
B.51183...	46.11	47.11	20.3	19.7	18.4	17.2	90.4	85.0	7	8
B.51190...	41.63	37.50	21.4	20.7	19.4	18.9	91.2	90.5	9	6
B.51192...	43.29	40.17	20.6	20.3	17.8	17.8	90.3	88.1	12	11
B.51211...	41.72	37.18	20.6	21.2	20.0	18.9	94.0	89.9	15	8
B.51259...	44.74	43.67	21.2	21.5	18.5	18.0	87.3	84.7	17	20
B.51311...	49.76	37.53	20.9	20.4	19.2	19.0	91.6	92.7	8	5
B.51321...	52.24	42.88	21.4	20.6	19.7	19.1	92.3	89.5	11	5
B.51353...	55.82	50.73	19.5	19.1	15.7	17.2	84.8	86.8	11	5
B.51355...	59.12	50.02	18.9	18.8	17.6	15.7	88.2	82.9	12	5

The following differences between mean yields may be considered significant:—
Foursquare ± 5.14 tons cane per acre.
Ridge ± 5.34 tons cane per acre.

At Foursquare, B.51355 gave the heaviest yield of cane followed by B.51353, B.4744, B.51321, B.5143, B.5124, B.51168 and B.37161. B.51355 was significantly better than all others except B.51353 and B.4744. B.51353 and B.4744 in turn significantly outyielded B.37161.

The juices of B.51353, B.51355 and B.5143 were so poor in sucrose that they cannot be considered for commercial cultivation. B.5124 and B.51321, on the other hand, gave quite rich juices and moderate cane yields. If they ratoon well, they may find a place in commercial cultivation.

At Ridge, B.4744 gave the heaviest yield of plant cane followed by B.51353, B.51355, B.51168, B.51183, B.51156, B.51129, B.51259, B.5124 and B.51321. B.4744 was significantly better than all others except B.51353, B.51355, B.51168 and B.51183. The same remarks which were made about juice qualities at Foursquare apply to Ridge. There were relatively few rotten canes in this trial.

Table XIII

Soil Type:—Group II(b)—Third Year Seedling Trials—First Ratoons

Hanson — Cut — 14th and 15th April, 1955

Variety	Tons Cane per Acre			Z.H.R. Brix			% Sucrose in Juice			Purity			No. of Rotten Canes per Plot		
	Plant Canes	1st Rtns.	Mean	Plant Canes	1st Rtns.	Mean	Plant Canes	1st Rtns.	Mean	Plant Canes	1st Rtns.	Mean	Plant Canes	1st Rtns.	Mean
B.37161 ...	40.35	27.20	33.78	20.5	23.9	22.2	17.9	20.9	19.4	91.1	91.7	91.4	11	7	9
B.4744 ...	53.65	31.29	42.47	20.5	23.6	22.1	18.6	21.3	20.0	90.4	90.3	90.4	26	9	18
B.49119 ...	45.42	32.97	39.20	21.0	23.3	22.2	19.0	21.0	20.0	89.8	89.6	89.7	26	3	15
B.5011 ...	38.80	27.70	33.25	21.1	23.6	22.4	19.2	20.6	19.9	89.1	86.2	87.7	39*	6	23
B.5028 ...	41.60	31.12	36.36	20.3	24.3	22.3	17.9	21.2	19.6	89.4	89.7	89.6	27	7	17
B.5037 ...	41.32	26.85	34.09	21.1	24.3	22.7	18.5	21.8	20.2	90.9	90.8	90.9	14	6	10
B.5047 ...	41.36	27.76	34.56	20.4	23.5	22.0	18.2	21.5	19.9	90.8	89.4	90.1	26	7	17
B.5098 ...	43.75	24.94	34.35	19.3	22.1	20.7	18.2	17.0	17.6	89.8	78.4	84.1	20	5	13
B.50109 ...	29.58	21.20	25.39	20.9	23.5	22.2	18.3	21.7	20.0	90.3	91.3	90.8	109*	79*	94
B.50112 ...	47.28	33.56	40.42	20.7	23.7	22.2	19.2	21.8	20.5	92.1	91.8	92.0	14	7	11
B.50115 ...	40.88	27.75	34.32	18.4	21.2	19.8	16.1	18.4	17.3	86.7	87.4	87.1	17	4	11
B.50153 ...	41.92	24.64	33.28	21.3	24.3	22.8	19.0	20.7	19.9	90.0	88.7	89.4	21	10	16
B.50166 ...	45.51	30.80	38.16	19.4	22.8	21.1	17.4	20.0	18.7	88.8	91.1	90.0	25	4	15
B.50210 ...	45.38	28.87	37.13	20.4	23.1	21.8	18.8	20.2	19.5	90.4	88.8	89.6	16	6	11
B.50267 ...	46.26	32.77	39.52	21.0	23.7	22.4	18.3	21.2	19.8	88.6	89.4	89.0	15	5	10
B.50268 ...	48.24	26.98	37.61	20.5	23–5	22.0	17.8	20.4	19.1	88.7	89.4	89.1	73*	10	42
B.50275 ...	39.42	26.74	33.08	20.5	23.2	21.9	17.7	20.7	19.2	89.3	90.3	89.8	23	12	18
B.50311 ...	40.62	29.49	35.06	20.3	22.5	21.4	17.9	19.7	18.8	90.3	86.6	88.5	11	5	8
B.50347 ...	45.02	30.86	37.94	20.6	22.1	21.4	17.8	19.6	18.7	89.4	88.9	89.2	13	4	9
B.50377 ...	40.62	25.64	33.13	21.6	26.2	23.9	19.7	23.2	21.5	91.7	90.8	91.3	15	13	14

* Damaged by rats.

A difference of ± 4.35 tons cane per acre may be considered significant.

At Hanson, B.50112 gave the heaviest yield of ratoon cane followed by B.49119, B.50267, B.4744, B.5028, B.50347 any B.50166. The differences between the mean cane yields of these varieties cannot be shown to be significant. Considering the mean yields over the two crops, B.4744 has given the heaviest yield of cane followed by B.50112, B.50267, B.49119, B.50347, B.50268 and B.50210. B.50112 has performed well, particularly as a ratoon, and has a very good juice of high purity. It is, however, very recumbent and holds its trash rather firmly. None of the other varieties has been outstanding in any of the other ratoon trials, and are hardly likely to compete with B.49119 and B.50112. B.50377 has the best juice of the B.50′ series but flowers so heavily, even at the lower elevations, that it cannot be considered for commercial planting. The variety B.50109 was singled out for attention by rats in this trial, hence the large number of rotten canes found.

TABLE XIV

Soil Type:—Group II(b)—Third Year Seedling Trials—First Ratoons

Belle — Cut — 12th and 13th April, 1955

VARIETY	TONS CANE PER ACRE			Z.H.R. BRIX			% SUCROSE IN JUICE			PURITY			NO. OF ROTTEN CANES PER PLOT		
	Plant Canes	1st Rtns.	Mean	Plant Canes	1st Rtns.	Mean	Plant Canes	1st Rtns.	Mean	Plant Canes	1st Rtns.	Mean	Plant Canes	1st Rtns.	Mean
B.37161 ...	40.84	24.10	32.47	20.4	22.0	21.2	18.7	18.8	18.8	89.7	88.0	88.9	14	21	18
B.4744 ...	47.38	29.91	38.65	21.3	22.5	21.9	18.0	19.2	18.6	87.7	85.8	88.7	19	19	19
B.49119 ...	49.24	40.15	44.70	21.3	22.4	21.9	19.2	19.4	19.3	89.2	85.8	87.5	11	11	11
B.5011 ...	38.33	25.22	31.78	21.5	22.9	22.2	18.9	19.3	19.1	87.7	82.6	85.2	12	48	30
B.5028 ...	36.78	25.48	31.13	21.1	22.9	22.0	18.5	17.4	18.0	88.0	79.4	83.7	17	30	24
B.5037 ...	42.79	24.75	33.77	20.9	23.5	22.2	19.1	21.3	20.2	89.3	89.5	89.4	16	21	19
B.5047 ...	39.27	19.92	29.60	20.4	22.6	21.5	18.0	19.1	18.6	87.3	83.7	85.5	15	31	23
B.5098 ...	40.06	25.02	32.54	19.6	20.3	20.0	16.8	16.8	16.8	84.8	79.3	82.1	13	14	14
B.50109 ...	36.02	16.07	26.05	20.1	23.3	21.7	18.4	21.1	19.8	89.7	86.2	88.0	60	111	86
B.50112 ...	43.07	27.46	35.27	21.1	22.2	21.7	18.3	19.7	19.0	88.0	87.4	87.7	15	16	16
B.50115 ...	41.26	22.72	31.99	18.5	20.1	19.3	15.5	17.2	16.4	84.5	85-1	84.8	13	17	15
B.50153 ...	40.34	23.15	31.75	21.2	22.4	21.8	19.7	19.5	19.6	91.4	85.1	88.3	30	15	23
B.50166 ...	40.59	25.76	33.18	20.3	22.9	21.6	17.9	19.5	18.7	89.2	87.4	88.3	19	15	17
B.50210 ...	40.95	26.93	33.94	20.1	21.8	21.0	17.9	18.6	18.3	87.6	84.4	86.0	10	17	14
B.50267 ...	42.79	15.23	29.01	21.8	22.5	22.2	18.7	18.9	18.8	89.1	86.3	87.7	17	74	46
B.50268 ...	38.91	22.19	30.55	20.6	21.8	21.2	17.1	18.6	17.9	87.0	85.7	86.4	91	41	66
B.50275 ...	38.01	18.28	28.15	21.4	22.0	21.7	19.0	18.5	18.8	90.5	84.2	87.4	28	44	36
B.50311 ...	42.98	26.08	34.53	20.5	21.9	21.2	17.7	19.4	18.6	88.6	86.2	87.4	11	12	12
B.50347 ...	46.02	29.19	37.61	20.3	20.9	20.6	17.0	16.1	16.6	84.9	78.7	81.8	13	14	14
B.50377 ...	37.64	28.95	33.30	21.5	24.9	23.2	20.5	22.0	21.3	91.5	89.4	90.5	19	10	15

A difference of ± 3.72 tons cane per acre may be considered significant.

In this trial, B.49119 gave by far the heaviest yield of ratoon cane, and was significantly better than any of the other varieties tried. It was followed by B.4744 (which yielded over ten tons of cane to the acre less), B.50347, B.50377 and B.50112. Taking the mean yields over the two crops, B.49119 has given the heaviest yield of cane followed by B.4744, B.50347, B.50112 and B.50311. Of these the variety B 50347 has a very poor juice. The juice of B.50377 is exceptionally good and was the best in this trial. B.50112 performed fairly well in this trial, but still gave an average of over nine tons of cane per acre less than B.49119. It has quite a good juice but is recumbent and difficult to clean.

Table XV

Soil Type:Group II(b)—Select Seedling Trials—First Ratoons

Hannays — Cut — 4th March, 1955

Variety	Tons Cane per Acre			Tons Sugar per Acre			% Sucrose in Cane			Purity			No. of Rotten Canes per Plot		
	Plant Canes	1st Rtns.	Mean	Plant Canes	1st Rtns.	Mean	Plant Canes	1st Rtns.	Mean	Plant Canes	1st Rtns.	Mean	Plant Canes	1st Rtns.	Mean
B.37161 ...	34.18	31.71	32.95	5.03	4.37	4.70	14.7	15.1	14.9	90.8	91.4	91.1	18	12	15
B.46364 ...	35.63	32.10	33.87	5.18	4.17	4.68	14.5	14.5	14.5	90.3	90.1	90.2	9	5	7
B.4738 ...	32.67	35.82	34.25	4.91	4.92	4–92	15.0	15.4	15.2	90.3	89.4	89.9	29	9	19
B.4744 ...	46.87	36.45	41.66	7.29	5.18	6.24	15.0	15.9	15.5	90.7	89.3	90.0	18	12	15
B.47419 ...	41.50	34.78	38.14	6.47	5.03	5.75	15.6	16.0	15.8	90.6	90.0	90.3	39	13	26

A difference of ± 0.61 tons sugar per acre may be considered significant. The differences between mean cane yields cannot be shown to be significant.

In this trial, B.4744 gave the heaviest yield of ratoon cane followed by B.4738, B.47419 and B.46364. However, the differences between the mean cane yields of the varieties tested cannot be shown to be significant. B.4744 gave the heaviest yield of ratoon sugar, and significantly outyielded B.37161 and B.46364. It was followed by B.47419 which also significantly outyielded B.37161 and B.46364. B.4738 was significantly better than B.46364. B.47419 gave the best juice as judged by sucrose in cane, followed by B.4744 and B.4738. Juice purities were all quite good, and there was little rotten cane in the ratoon crop.

Taking the yields over the two crops, B.4744 has given the heaviest yield of cane and sugar, followed by B.47419 and B.4738. B.47419 gave the best juice and there was little to choose between the purities of any of the varieties tried.

Table XVI

Soil Type:—Group II(b) — Select Seedling Trials — First Ratoons

Friendship — Cut — 1st March, 1955

Variety	Tons Cane per Acre			Tons Sugar per Acre			% Sucrose in Cane			Purity			No. of Rotten Canes per Plot		
	Plant Canes	1st Rtns.	Mean	Plant Canes	1st Rtns.	Mean	Plant Canes	1st Rtns.	Mean	Plant Canes	1st Rtns.	Mean	Plant Canes	1st Rtns.	Mean
B.37161 ...	44.43	32.21	38.32	5.88	4.23	5.06	13.3	14.8	14.1	89.8	88.7	89.3	13	12	13
B.46364 ...	43.87	29.05	36.46	5.65	3.87	4.76	12.9	14.9	13.9	87.8	89.3	88.6	5	7	6
B.4738 ...	45.65	31.75	38.70	5.13	4.16	4.65	11.2	15.1	13.2	81.8	86.5	84.2	9	8	9
B.4744 ...	51.53	33.26	42.40	6.85	4.54	5.70	13.3	15.7	14.5	87.2	87.2	87.2	15	15	15
B.47419 ...	47.24	30.45	38.85	5.73	4.15	4.94	12.1	15.6	13.9	83.4	87.4	85.4	14	46	30

The differences between the mean yields of cane and sugar cannot be shown to be significant.

In this trial, B.4744 gave the heaviest yield of ratoon cane and sugar, followed by B.37161, B.47419 and B.4738. However, the differences between the mean yields of the varieties tried cannot be shown to be significant. B.4744 gave the best juice quality followed by B.47419, B.4738 and B.46364. Purities were low, as the trial was cut relatively early in the season. B.47419 was damaged to some extent by rats and weevil borer. Considering the mean yields over the two crops, B.4744 has given the heaviest yield of cane and sugar. B.47419 gave the next heaviest yield of cane, but was narrowly beaten on sugar yield by B.37161. B.4744 had the best juice quality as judged by per cent sucrose in cane followed by B.37161, B.47419 and B.46364. B.37161 had the best juice purity followed by B.46364 and B.4744.

Table XVII

Soil Type:—Group II(b)—Select Seedling Trials—Second Ratoons Searles — Cut — 18th March, 1955

Variety	Tons Cane per Acre				Tons Sugar per Acre				% Sucrose in Cane				Purity				No. of Rotten Canes per Plot			
	Plant Canes	1st Rtns.	2nd Rtns.	Mean	Plant Canes	1st Rtns.	2nd Rtns.	Mean	Plant Canes	1st Rtns.	2nd Rtns.	Mean	Plant Canes	1st Rtns.	2nd Rtns.	Mean	Plant Canes	1st Rtns.	2nd Rtns.	Mean
B.37161	34.18	30.34	31.46	32.33	4.79	4.82	4.51	4.71	14.0	15.9	15.9	15.3	89.6	82.5	90.2	87.4	11	7	6	8
B.41211	41.68	43.29	38.82	41.26	5.70	6.33	4.91	5.65	13.7	14.7	15.0	14.5	87.0	76.3	84.3	82.5	5	10	10	8
B.4744 ...	44.30	40.98	37.26	40.85	6.20	6.31	5.01	5.84	14.1	15.4	15.5	15.0	89.1	81.1	86.9	85.7	8	9	10	9
B.47419	41.94	43.50	38.90	41.45	5.68	6.42	5.43	5.84	13.5	14.8	15.9	14.7	86.7	76.6	87.8	83.7	14	12	25	17

A difference of ± 3.10 tons cane per acre may be considered significant.
Differences between mean sugar yields cannot be shown to be significant.

In this trial, B.47419 gave the heaviest yield of second ratoon cane and sugar, followed by 41211 and B.4744 on cane and B.4744 and B.41211 on sugar. All of these varieties outyielded B.37161 significantly on second ratoon cane, but the differences between the mean second ratoon sugar yields cannot be shown to be significant. B.47419 and B.37161 gave the best juices as judged by the percentage sucrose in cane followed by B.4744. B.37161 had the best juice purity. Taking the mean yields over the three crops, B.47419 has given the heaviest yield of cane closely followed by B.41211 and B.4744. B.47419 and B.4744 gave the heaviest yield of sugar closely followed by 41211, while B.37161 was last, yielding nearly one ton of sugar per acre less than its nearest rival B.41211. B.37161 has given the best juice quality and purity followed by B.4744 and B.47419.

TABLE XVIII

Soil Type:—Group II(c) Third Year Seedling Trials—Plant Canes
Orange Hill — Cut — 23rd & 24th February, 1955
Hothersal — Cut — 21st and 22nd March, 1955

VARIETY	TONS CANE PER ACRE		Z.H.R. BRIX		% SUCROSE IN JUICE		PURITY		No. OF ROTTEN CANES PER PLOT	
	Orange Hill	Hothersal	Orange Hill	Hothersal	Orange Hill	Hothersal	Orange Hill	Hothersal	Orange Hill	Hothersal
B.37161 ...	38.26	41.76	18.7	20.8	17.2	17.8	90.7	90.9	11	16
B.4744... ...	59.81	55.40	19.2	21.9	16.0	18.9	87.7	89.7	8	16
B.5124... ...	52.28	46.43	19.9	22.6	18.4	19.9	89.3	88.8	10	35
B.5143... ...	43.70	43.45	18.5	19.6	16.7	18.2	89.2	88.6	11	19
B.51116 ...	43.97	40.25	20.0	22.7	18.9	20.8	90.8	90.5	13	28
B.51129 ...	44.49	42.47	19.4	23.4	17.9	20.4	89.3	90.3	9	40
B.51156 ...	42.62	42.95	17.9	21.0	15.1	17.2	84.4	84.8	9	16
B.51167 ...	36.66	35.44	17.5	20.7	17.2	18.5	89.4	90.1	34	51
B.51168 ...	45.86	45.17	18.5	21.6	17.2	18.3	90.1	87.2	21	29
B.51183 ...	40.37	46.50	18.7	21.5	17.4	16.0	88.8	80.2	11	17
B.51190 ...	42.78	41.70	19.0	20.7	16.7	18.0	87.3	88.2	6	23
B.51192 ...	40.27	40.71	18.9	21.4	16.2	18.4	89.0	88.7	6	13
B.51211 ...	37.84	37.35	18.7	21.3	17.7	19.7	90.1	91.3	9	24
B.51259 ...	33.68	38.33	20.4	22.4	17.9	18.2	87.5	83.4	12	28
B.51311 ...	44.08	49.11	19.7	21.9	17.3	19.6	89.4	90.0	7	14
B.51321 ...	47.96	46.63	19.1	22.0	18.5	19.6	89.6	90.7	7	18
B.51353 ...	53.69	55.79	17.4	20.3	16.3	15.9	87.3	82.7	7	11
B.51355 ...	51.96	52.35	16.1	19.6	16.4	15.9	91.0	83.7	7	15

The following differences between mean yields may be considered significant.—
Orange Hill ± 5.20 tons cane per acre.
Hothersal ± 5.46 tons cane per acre.

At Orange Hill, B.4744 gave the heaviest yield of plant cane and significantly outyielded all other varieties tried. It was followed by B.51353, B.5124 and B.51355. It will be noted that the standard variety, B.37161, gave one of the poorest yields of any of the varieties tried. B.50116 gave the best quality juice as judged by the percent sucrose in juice, but this variety was not particularly outstanding otherwise. B.51353 and B.51355 gave very poor juices and cannot be considered for commercial cultivation. B.51321 gave a good juice but only a moderate yield of plant cane. B.5124 also had a good juice and gave a fairly good yield of plant cane. However, it will have to be a particularly strong ratooner if it is to compete with B.4744 and B.49119 on a commercial scale.

At Hothersal, B.51353 gave the heaviest yield of plant cane followed by B.4744 and B.51355. The differences between the mean yields of these varieties are insignificant at odds of 20:1. B.51311, B.5124 and B.51321 also performed reasonably well and all have quite good juices. As has been mentioned before, the juices of B.51353 and B.51355 are so poor that they cannot be considered for commercial cultivation.

Table XIX

Soil Type:—Group II(c)—Third Year Seedling Trials—First Ratoons

Portland — Cut — 21st and 22nd February, 1955

Variety	Tons Cane per Acre			Z.H.R. Brix			% Sucrose in Juice			Purity			No. of Rotten Canes per Plot		
	Plant Canes	1st Rtns.	Mean	Plant Canes	1st Rtns.	Mean	Plant Canes	1st Rtns.	Mean	Plant Canes	1st Rtns.	Mean	Plant Canes	1st Rtns.	Mean
B.37161 ...	44.11	31.71	37.91	17.5	18.3	17.9	15.9	15.4	15.7	89.9	89.1	89.5	5	8	7
B.4744 ...	56.39	28.32	42.36	18.2	19.4	18.8	16.5	16.8	16.7	89.6	91.0	90.3	4	10	7
B.49119 ...	54.95	45.53	50.24	19.3	18.9	19.1	17.0	17.1	17.1	89.4	89.3	89.4	4	6	5
B.5011 ...	49.66	36.75	43.21	19.0	19.1	19.1	17.1	17.7	17.4	89.2	89.3	89.3	3	18	11
B.5028 ...	49.38	33.38	41.38	17.5	18.5	18.0	16.2	16.0	16.1	89.2	88.2	88.7	9	16	13
B.5037 ...	51.22	27.94	39.58	18.1	18.0	18.1	15.9	16.9	16.4	88.6	92.0	90.3	8	12	10
B.5047 ...	48.98	28.20	38.59	17.8	18.3	18.1	15.8	15.8	15.8	87.9	87.7	87.8	8	22	15
B.5098 ...	51.22	25.04	38.13	18.1	17.6	17.9	16.5	15.5	16.0	89.8	86.0	87.9	5	26	16
B.50109 ...	51.11	27.39	39.25	18.6	18.3	18.5	15.6	15.3	15.5	88.8	87.9	88.4	11	13	12
B.50112 ...	51.51	39.77	45.64	18.9	18.8	18.9	16.9	16.5	16.7	89.6	89.7	89.7	4	13	9
B.50115 ...	51.75	27.23	39.49	16.7	17.0	16.9	13.0	13.1	13.1	84.4	83.3	83.9	10	11	11
B.50153 ...	50.62	28.35	39.49	19.6	18.9	19.3	17.7	16.8	17.3	90.2	90.1	90.2	12	20	16
B.50166 ...	49.72	35.23	42.48	16.9	17.2	17.1	14.0	15.2	14.6	87.0	88.6	87.8	8	12	10
B.50210 ...	48.46	36.21	42.34	18.3	18.2	18.3	15.9	16.3	16.1	88.3	88.4	88.4	6	11	9
B.50267 ...	54.94	34.63	44.79	18.8	17.6	18.2	16.2	17.0	16.6	88.0	90.4	89.2	6	10	8
B.50268 ...	53.98	30.93	42.46	17.7	17.8	17.8	14.3	15.0	14.7	87.7	87.6	87.7	35	21	28
B.50275 ...	58.48	33.95	46.22	18.5	17.9	18.2	15.6	15.8	15.7	88.7	89.0	88.9	8	15	12
B.50311 ...	48.28	37.40	42.84	17.6	17.6	17.6	16.4	16.2	16.3	89.5	89.4	89.5	8	14	11
B.50347 ...	55.53	40.36	47.95	17.7	17.5	17.6	15.7	15.4	15.6	87.9	86.6	87.3	5	10	8
B.50377 ...	45.12	38.93	42.03	19.6	19.9	19.8	17.0	17.2	17.1	89.9	89.7	89.8	3	8	6

A difference of ± 5.26 tons cane per acre may be considered significant.

In this trial, B.49119 was outstanding, outyielding all other varieties significantly. B.50347 gave the second heaviest yield of ratoon cane, but was not significantly better than B.50112, B.50377, B.5011, B.50210 and B.50166. Taking the mean yields over the two crops, B.49119 has been outstanding. It was followed in this trial by B.50347, B.50275, B.50112, B.50267 and B.5011. B.50347 has a poor juice, but has given quite good cane yields particularly as a ratoon. The juice of B.50275 is not outstanding and its cane yields, generally speaking, have been moderate. B.50112 is perhaps the nearest rival to B.49119 for commercial cultivation, but as has been mentioned before, it has certain undesirable field characters. B.5011 gave the best juice quality under the conditions of this trial, which was cut very early in the season. Normally, B.50377 gives the best juice but obviously was not ripe when this trial was cut. Juice purities were high considering the early date of reaping.

TABLE XX

Soil Type:—Group II(c)—Third Year Seedling Trials—First Ratoons
Wakefield — Cut — 19th and 20th April, 1955

VARIETY	TONS CANE PER ACRE			Z.H.R. BRIX			% SUCROSE IN JUICE			PURITY			No. OF ROTTEN CANES PER PLOT		
	Plant Canes	1st Rtns.	Mean	Plant Canes	1st Rtns.	Mean	Plant Canes	1st Rtns.	Mean	Plant Canes	1st Rtns.	Mean	Plant Canes	1st Rtns.	Mean
B.37161 ...	35.53	38.41	36.97	17.1	22.4	19.8	15.8	19.7	17.8	89.9	89.5	89.7	48	19	34
B.4744 ...	57.87	49.20	53.54	19.2	22.3	20.8	16.1	17.7	16.9	87.2	83.5	85.4	24	43	34
B.49119 ...	49.76	59.73	54.75	18.7	21.6	20.2	16.5	18.7	17.6	87.8	85.6	86.7	19	25	22
B.5011 ...	41.01	42.78	41.90	19.2	22.3	20.7	17.1	17.7	17.4	88.2	77.9	83.1	24	27	26
B.5028 ...	42.41	45.85	44.13	19.5	23.1	22.3	16.2	18.1	17.2	85.5	82.0	83.8	26	35	31
B.5037 ...	44.74	46.10	45.42	19.2	22.6	20.9	18.0	19.7	18.9	91.3	88.2	89.8	20	30	25
B.5047 ...	39.66	34.57	37.12	18.2	22.0	20.1	16.2	18.3	17.3	86.8	81.6	84.2	30	38	34
B.5098 ...	45.45	40.48	42.97	17.3	21.2	19.3	15.9	15.9	15.9	87.2	75.4	81.3	24	26	25
B.50109 ...	44.72	36.97	40.85	17.3	22.2	19.8	16.4	20.1	18.3	90.1	89.6	89.9	42	48	45
B.50112 ...	44.72	46.70	45.71	16.4	22.1	19.3	16.5	19.5	18.0	87.9	86.5	87.2	34	25	30
B.50115 ...	45.13	37.68	41.41	17.6	20.6	19.1	15.8	16.7	16.3	88.3	84.3	86.3	14	24	19
B.50153 ...	45.05	38.71	41.88	19.9	22.3	21.1	17.8	18.3	18.1	90.2	84.1	87.2	33	64	49
B.50166 ...	39.31	37.73	38.52	16.5	21.2	19.4	15.5	19.4	17.5	89.6	88.9	89.3	24	45	35
B.50210 ...	39.69	40.32	40.01	17.3	22.1	19.7	16.9	18.8	17.9	88.7	83.5	86.1	13	14	14
B.50267 ...	43.12	43.55	43.34	19.9	23.0	21.5	17.7	19.3	18.5	90.0	86.8	88.4	21	42	32
B.50268 ...	44.03	31.87	37.95	18.6	20.7	19.7	16.4	16.9	16.5	88.9	79.7	84.3	89	80	85
B.50275 ...	43.15	36.16	39.66	18.1	22.1	20.1	15.7	18.7	17.2	86.5	88.1	87.3	37	46	42
B.50311	38.13	40.77	39.45	18.0	23.1	20.6	17.0	18.4	17.7	90.3	83.5	86.9	21	35	28
B.50347 ...	49.93	44.63	47.28	16.8	21.7	19.3	15.9	18.2	17.1	86.8	83.8	85.3	17	19	18
B.50377 ...	37.69	39.55	38.62	19.1	25.1	22.1	17.7	22.6	20.2	90.8	90.6	90.7	14	29	22

A difference of ± 5.11 tons cane per acre may be considered significant.

In this trial, B.49119 greatly and significantly outyielded all other varieties tried. B.4744 gave the second heaviest yield of ratoon cane and was significantly better than all others with the exception of B.50112, B.5037, B.5028 and B.50347. B.50377 gave a moderate yield of ratoon cane, and flowered very heavily. Its juice quality was outstanding in this trial. The juice of B.49119 was satisfactory, considering its exceptionally heavy yield of ratoon cane. B.50112 also gave a good juice, and its ratoon yields were higher than those given by the plant cane trial.

Considering the mean yields over the two crops, B.49119 has given the heaviest yield of cane followed by B.4744, B.50347, B.50112 and B.5037. It is interesting to note that all of the new varieties tried have outyielded the old standard, B.37161. The juice quality of B.50377 has been outstanding in these trials. The juice of B.50347 has been inclined to be low in sugar content and, further, it cannot compete in cane yield with B.49119. B.50112 has a very good juice, but the present indications are that it too will be unable to compete with B.49119.

TABLE XXI

Soil Type:—Group II(c) Select Seedling Trials—First Ratoons
Drax Hall: Cut — 18th April, 1955

VARIETY	TONS CANE PER ACRE			TONS SUGAR PER ACRE			% SUCROSE IN CANE			PURITY			No. OF ROTTEN CANES PER PLOT		
	Plant Canes	1st Rtns.	Mean	Plant Canes	1st Rtns.	Mean	Plant Canes	1st Rtns.	Mean	Plant Canes	1st Rtns.	Mean	Plant Canes	1st Rtns.	Mean
B.37161 ...	36.89	27.96	32.43	4.93	4.02	4.48	13.4	15.7	14.6	90.0	91.7	90.9	28	34	31
B.4744 ...	53.49	40.73	47.11	8.03	5.69	6.86	15.0	15.9	15.5	89.8	88.2	89.0	39	43	41
B.47380 ...	35.94	25.63	30.79	5.35	3.92	4.64	14.8	16.7	15.8	90.2	91.7	91.0	56	91	74
B.47419 ...	44.97	33.98	39.48	6.60	4.89	5.75	14.6	16.2	15.4	88.3	89.0	88.7	40	49	45
B.49119 ...	39.41	39.75	39.58	5.40	5.54	5.47	13.7	15.7	14.7	88.6	88.6	88.6	15	20	18

Differences of ± 3.68 tons cane per acre and ± 0.62 tons sugar per acre may be considered significant.

In this trial, B.4744 gave the heaviest yield of ratoon cane and sugar followed by B.49119, B.47419 and B.37161. B.4744 and B.49119 significantly outyielded all other varieties tried on cane and sugar. B.47419 was significantly better than B.37161 and B.47380 on cane and sugar. No significant difference can be shown between the mean cane and sugar yields of B.37161 and B.47380. All varieties suffered some rat damage. B.47380 being the worst in this respect.

B.47380 gave the best juice as judged by the percentage sucrose in cane, followed by B.47419, B.4744 and B.49119. B.47380 along with B.37161 also gave juices with the highest purity.

Taking the mean yields over the two crops, B.4744 has given the heaviest yield of cane, followed by B.49119, B.47419 and B.37161. B.4744 gave the heaviest yield of sugar followed by B.47419, B.49119 and B.47380. B.47380 gave the best juice as judged by the percentage sucrose in cane followed by B.4744, B.47419 and B.49119. B.47380 gave juice with the highest purity, very closely followed by B.37161. There were some rotten and rat-eaten canes in these trials, B.47380 suffering the worst damage and B.49119 the least.

TABLE XXII

Soil Type:—Group II(c)—Select Seedling Trials—First Ratoons
Mount Brevitor: Cut — 28th March, 1955

VARIETY	TONS CANE PER ACRE			TONS SUGAR PER ACRE			% SUCROSE IN CANE			PURITY			No. OF ROTTEN CANES PER PLOT		
	Plant Canes	1st Rtns.	Mean	Plant Canes	1st Rtns.	Mean	Plant Canes	1st Rtns.	Mean	Plant Canes	1st Rtns.	Mean	Plant Canes	1st Rtns.	Mean
B.37161 ...	46.87	41.29	44.08	6.36	5.42	5.89	13.6	14.6	14.1	88.8	89.9	89.4	38	16	27
B.46364 ...	48.22	41.89	45.06	6.55	5.51	6.03	13.6	14.6	14.1	88.0	90.0	88.5	33	8	21
B.4744 ...	55.61	44.76	50.19	7.66	5.18	6.42	13.8	13.7	13.8	86.0	84.4	85.2	38	21	30
B.47380 ...	45.92	37.10	41.51	6.64	4.92	5.78	14.4	15.2	14.8	87.1	86.4	86.4	63	19	41
B.47419 ...	55.40	43.53	49.47	7.78	5.57	6.68	14.0	14.6	14.3	86.6	87.3	87.0	62	24	43

Differences of ± 3.79 tons cane per acre and ± 0.35 tons sugar per acre may be considered significant.

In this trial, B.4744 again gave the heaviest yield of ratoon cane followed by B.47419, B.46364 and B.37161. There was no significant difference between the varieties mentioned above, but all of them were significantly better than the variety B.47380. B.47419 gave the heaviest yield of ratoon sugar, closely followed by B.46364, B.37161 and B.4744. The first three varieties significantly outyielded B.47380. B.47380 gave the richest juice as judged by the percentage sucrose in cane followed by B.37161, B.46364 and B.47419, all three of which gave a figure of 14.6% sucrose in cane. The juice uqality of B.4744 was exceptionally poor in this trial. This was probably due to sampling errors, as a check in the laboratory confirmed the figures. B.46364 had juice with the highest purity closely followed by B.37161. The juice purity of B.4744 was very poor in this trial. Little rotten cane was found.

Considering the mean yields of the two trials, B.4744 has given the heaviest yield of cane followed by B.47419, B.46364 and B.37161. B.47419 has given the heaviest yield of sugar followed by B.4744, B.46364 and B.37161. B.47380 gave the richest juice and B.4744 the poorest. B.37161 had juice of the highest purity, followed by B.46364, B.47419 and B.4738. There was some rat damage in the plant cane crop and B.47419 and B.47380 suffered the worst damage.

Table XXIII

Soil Type:—Group II(c)—Select Seedling Trials—Second Ratoons
Applewhaites: Cut — 24th March, 1955

Variety	Tons Cane per Acre				Tons Sugar per Acre				% Sucrose in Cane				Purity				No. of Rotten Canes per Plot			
	Plant Canes	1st Rtns.	2nd Rtns.	Mean	Plant Canes	1st Rtns.	2nd Rtns	Mean	Plant Canes	1st Rtns.	2nd Rtns.	Mean	Plant Canes	1st Rtns.	2nd Rtns.	Mean	Plant Canes	1st Rtns.	2nd Rtns.	Mean
B.37161	44.08	43.18	35.17	40.81	6.04	5.97	4.72	5.58	13.7	13.8	14.9	14.1	89.5	90.2	89.7	89.8	24	27	21	24
B.41211	45.44	50.89	43.12	46.48	6.69	7.11	5.06	6.29	14.7	13.9	14.3	14.3	88.4	88.5	82.2	86.4	55	54	37	49
B.45151	48.61	50.42	40.58	46.54	7.33	7.71	5.89	6.98	15.1	15.3	16.3	15.6	90.0	90.7	89.4	90.0	20	32	29	27
B.4744	51.88	52.95	42.25	49.03	7.69	7.69	5.39	6.92	14.8	14.5	14.8	14.7	88.9	89.7	86.4	88.3	26	46	24	32
B.47419	49.90	51.73	40.25	47.29	7.31	7.74	5.41	6.82	14.6	15.0	15.3	15.0	88.6	89.2	87.7	88.5	28	25	30	28

Differences of ± 3.22 tons cane per acre and ± 0.31 tons sugar per acre may be considered significant.

In this trial, B.41211 gave the heaviest yield of second ratoon cane followed by B.4744, B.45151, B.47419 and B.37161. B.37161 was significantly outyielded by the other varieties. No significant differences can be shown to exist between the mean yields of the varieties, B.41211, B.4744, B.45151 and B.47419. B.45151 gave the heaviest yield of ratoon sugar and was significantly better than any of the other varieties tried. B.47419 and B.4744 gave almost identical sugar yields and were significantly better than B.41211 and B.37161. Finally, 41211 significantly outyielded B.37161. B.45151 had, by far, the best juice and B.41211 the poorest. B.37161 gave juice with the highest purity closely followed by B.45151. B.41211 had the lowest juice purity. Some canes in this trial were damaged by rats, and B.41211 was the worst affected in this respect.

Taking the mean yields over the three crops, B.4744 has given the heaviest yield of cane followed by B.47419, B.45151 and B.41211. B.45151 gave the heaviest yield of sugar followed by B.4744, B.49119 and B.41211. B.45151 has given the best quality juice followed by B.47419, B.4744 and B.41211. B.45151 gave juice of the highest purity and B.41211 the lowest. B.41211 suffered the heaviest damage from rats and weevil borers.

Table XXIV

Soil Type:—Group II(c)—Select Seedling Trials—Second Ratoons
Bowmanston: Cut — 23rd March, 1955

Variety	Tons Cane per Acre				Tons Sugar per Acre				% Sucrose in Cane				Purity				No. of Rotten Canes per Plot			
	Plant Canes	1st Rtns.	2nd Rtns.	Mean	Plant Canes	1st Rtns.	2nd Rtns.	Mean	Plant Canes	1st Rtns.	2nd Rtns.	Mean	Plant Cane	1st Rtns.	2nd Rtns.	Mean	Plant Canes	1st Rtns.	2nd Rtns.	Mean
B.37161	42.49	45.91	36.98	41.79	6.71	6.72	5.04	6.16	15.8	14.6	15.2	15.2	90.5	91.8	89.7	90.7	37	29	17	28
B.41211	41.59	47.30	38.32	42.40	6.33	6.51	4.05	5.63	15.3	13.8	13.3	14.1	84.2	87.0	79.6	83.6	55	39	31	42
B.45151	44.21	48.46	40.39	44.35	7.77	7.52	5.54	6.94	17.6	15.5	15.8	16.3	91.9	91.5	86.7	90.0	40	27	15	27
B.4744	49.63	49.25	42.23	47.04	7.91	7.17	5.14	6.74	15.9	14.6	14.5	15.0	88.1	90.7	84.0	87.6	53	37	12	34
B.47419	42.42	43.96	35.97	40.78	7.18	6.62	4.50	6.10	16.9	15.1	14.8	15.6	91.1	90.0	84.6	88.6	51	34	16	34

The differences between the mean yields of cane are insignificant. ± 0.57 tons sugar per acre may be considered significant.

In this trial, B.4744 gave the heaviest yield of second ratoon cane followed by B.45151, B.41211 and B.37161. The differences between the mean yields of these varieties cannot be shown to be significant. B.45151 gave the heaviest yield of second ratoon sugar followed by B.4744, B.37161, B.47419 and B.41211. B.45151 and B.4744 significantly outyielded B.47419 and B.41211, but not B.37161. B.37161 in turn was significantly better than B.41211. B.45151 gave the best juice as judged by the per cent sucrose in cane and B.41211 the poorest. The juice of B.37161 in this trial was exceptionally good. B.37161 gave juice with the highest purity and B.41211 the lowest. B.41211 suffered most severely from the ravages of rats and weevil borer.

Taking the mean yields over the three crops, B.4744 has given the heaviest yield of cane followed by B.45151, B.41211, B.37161 and B.47419. However, B.45151 has given the heaviest yield of sugar followed by B.4744, B.37161, B.47419 and B.41211. B.45151 had the best juice followed by B.47419, B.37161, B.4744 and B.41211. B.37161 had juice with the highest purity followed by B.45151, B.47419, B.4744 and B.41211. B.41211 suffered the worst damage from rats and weevil borers, but all varieties were damaged to some extent.

TABLE XXV

Soil Type:—Group IV(b)—Third Year Seedling Trials—Plant Canes
Boarded Hall: Cut — 3rd and 4th March, 1955

VARIETY	TONS CANE PER ACRE	Z.H.R. BRIX	% SUCROSE IN JUICE	PURITY	NO. OF ROTTEN CANES PER PLOT
B.37161 ...	44.65	20.0	17.8	89.5	16
B.4744 ...	58.21	20.6	18.2	87.8	20
B.5124 ...	47.04	20.8	19.1	88.1	14
B.5143 ...	45.34	18.8	16.4	84.4	16
B.51116 ...	45.97	20.3	18.1	87.5	23
B.51129 ...	43.37	21.6	19.4	87.7	23
B.51156 ...	41.76	19.1	15.8	81.9	18
B.51167 ...	19.27	17.8	15.8	85.4	245
B.51168 ...	43.94	19.4	16.1	85.5	32
B.51183 ...	43.20	18.6	16.4	83.4	12
B.51190 ...	40.61	19.9	16.3	82.6	11
B.51192 ...	43.91	19.4	17.4	87.2	8
B.51211 ...	42.63	19.7	18.4	90.1	13
B.51259 ...	39.20	20.6	17.5	82.4	18
B.51311 ...	48.83	19.4	18.0	86.9	11
B.51321 ...	48.47	20.5	19.5	88.8	17
B.51353 ...	57.40	17.3	14.0	79.8	8
B.51355 ...	56.01	17.6	15.4	82.3	12

A difference of $\pm$ 5.03 tons cane per acre may be considered significant.

In this trial, B.4744 gave the heaviest yield of plant cane followed by B.51353, B.51355, B.51311, B.51321 and B.5124. No significant difference can be found between the varieties B.4744 ,B.51353 and B.51355, all of which significantly outyielded all other varieties in the trial. The juices of B.51353 and B.51355 are so poor that they cannot be considered for planting on a commercial scale. B.51321 and B.5124 gave better yields of cane and have better juices than B.37161, but cannot come up to B.4744 as a plant cane. B.51321 gave the best juice quality but was not particularly outstanding in this respect. B.51167 was singled out by rats and the plots were almost completely destroyed. Other varieties suffered relatively little damage.

Table XXVI

Soil Type:—Group IV(b)—Third Year Seedling Trials—First Ratoons

Carrington: Cut — 7th and 8th March, 1955

Variety	Tons Cane per Acre			Z.H.R. Brix			% Sucrose in Juice			Purity			No. of Rotten Canes per Plot		
	Plant Canes	1st Rtns.	Mean	Plant Canes	1st Rtns.	Mean	Plant Canes	1st Rtns.	Mean	Plant Canes	1st Rtns.	Mean	Plant Canes	1st Rtns.	Mean
B.37161 ...	39.25	32.35	35.80	20.7	20.5	20.6	19.2	18.6	18.9	90.9	90.2	90.6	15	8	12
B.4744 ...	45.09	37.41	41.25	20.8	22.2	21.5	18.2	19.3	18.8	87.7	87.2	87.5	18	8	13
B.49119 ...	42.51	40.67	41.59	20.8	21.6	21.2	18.8	19.6	19.2	88.6	88.7	88.7	10	10	10
B.5011 ...	36.15	29.83	32.99	22.0	22.1	22.1	19.1	20.2	19.7	86.5	88.3	87.4	18	13	16
B.5028 ...	40.85	35.13	37.99	21.0	21.7	21.4	19.1	18.9	19.0	88.4	86.4	87.4	12	10	11
B.5037 ...	37.30	29.25	33.28	22.1	23.0	22.6	19.4	20.9	20.2	90.3	90.3	90.3	13	10	12
B.5047 ...	35.98	26.10	31.04	20.4	21.2	20.8	18.6	19.0	18.8	88.1	86.4	87.3	13	17	15
B.5098 ...	42.34	33.26	37.80	20.0	20.0	20.0	17.1	18.0	17.6	85.2	85.8	85.5	9	8	9
B.50109 ...	36.36	30.09	33.23	20.9	21.4	21.2	19.5	19.1	19.3	89.9	89.2	89.6	46	30	38
B.50112 ...	43.68	40.98	42.33	20.3	21.1	20.7	19.4	19.7	19.6	89.2	89.5	89.4	13	7	10
B.50115 ...	40.58	29.75	35.17	17.8	17.9	17.9	14.6	15.6	15.1	82.7	84.7	83.7	14	11	13
B.50153 ...	38.26	31.52	34.89	21.1	21.8	21.5	19.6	19.6	19–6	91.2	89.5	90.4	15	14	15
B.50166 ...	37.56	32.38	34.97	19.8	19.7	19 8	18.0	17.2	17.6	89.8	87.8	88.8	11	9	10
B.50210 ...	39.94	36.65	38.30	21.4	20.9	21.2	18.1	19.3	18.7	87.4	87.5	87.5	9	8	9
B.50267 ...	41.12	32.06	36.59	21.3	21.6	21.5	18.7	19.2	19.0	89.1	89.4	89.3	19	15	17
B.50268 ...	35.82	32.80	34.31	19.9	20.8	20.4	17.3	18.3	17.8	87.1	88.1	87.6	48	26	37
B.50275 ...	39.73	32.06	35.90	20.8	20.5	20.7	18.0	18.4	18.2	89.0	86.5	87.8	16	18	17
B.50311 ...	40.40	33.94	37.17	21.1	21.3	21.2	18.7	19.5	19.1	88.8	89.9	89.4	9	8	9
B.50347 ...	46.26	39.72	42.99	20.1	20.5	20.3	16.9	17.5	17.2	87.4	85.9	86.7	11	6	9
B.50377 ...	34.06	34.89	34.48	22.4	21.9	22.2	20.7	20.9	20.8	90.0	90.6	90.3	10	8	9

A difference of ± 3.58 tons cane per acre may be considered significant.

In this trial, B.50112 gave the heaviest yield of ratoon cane followed by B.49119, B.50347, B.4744, B.50210 and B.5028. B.50112 and B.49119 were significantly better than B.50210 and B.5028, and just failed to be better than B.4744. B.50347 was significantly better than B.5028. As usual, B.50377 had the best juice. B.50347 gave a good yield of cane, but its juice was so poor that it cannot be considered for commercial cultivation. B.50377 also had the highest purity juice and was closely followed in this respect by B.5037 and B.37161. B.50109 and B.50268 had a fairly large number of rotten canes.

Considering the mean yields over the two crops, B.50347 has given the heaviest yield of cane followed by B.50112, B.49119 and B.4744. B.50377 has given the best quality juice but arrows too heavily to be of value for commercial cultivation. B.49119 and B.50112, are the only two varieties which can be considered for commercial cultivation, both have good juices of satisfactory purity. B.50109 and B.50268 showed a tendency to rot in these trials.

Table XXVII

Soil Type:—Group IV(b)—Select Seedlings Trials—First Ratoons

Bulkeley: Cut 21st April, 1955

Variety	Tons Cane per Acre			Tons Sugar per Acre			% Sucrose in Cane			Purity			No. of Rotten Canes per Plot		
	Plant Canes	1st Rtns.	Mean	Plant Canes	1st Rtns.	Mean	Plant Canes	1st Rtns.	Mean	Plant Canes	1st Rtns.	Mean	Plant Canes	1st Rtns.	Mean
B.37161 ...	48.12	40.38	44.25	6.98	6.01	6.50	14.5	16.4	15.5	90.7	90.5	90.6	66	24	45
B.4738 ...	47.11	45.20	46.16	6.79	6.53	6.66	14.4	16.4	15.4	87.5	88.1	87.8	60	19	40
B.4744 ...	55.01	49.82	52.42	8.70	7.01	7.86	15.8	16.2	16.0	89.5	86.8	88.2	67	35	51
B.47380 ...	41.92	37.70	39.81	7.03	5.84	6.44	16.8	17.2	17.0	91.8	90.3	91.1	51	24	38
B.47419 ...	43.84	42.85	43.35	6.69	6.50	6.60	15.3	16.9	16.1	88.9	89.4	89.2	44	19	32

Differences of ± 3.52 tons cane per acre and ± 0.62 tons sugar per acre may be considered significant.

In this trial, B.4744 gave the heaviest yield of ratoon cane followed by B.4738 B.47419 and B.37161. B.4744 significantly outyielded all other varieties tried; B.4738 significantly outyielded B.37161 and B.47380; and B.47419 was significantly better than B.47380. B.4744 gave the heaviest yield and was significantly better than all other varieties on ratoon sugar with the exception of B.4738 and B.47419, over which it just failed to be significant. B.47419 and B.4738 significantly outyielded B.47380. The differences between the mean sugar yields of B.37161 and B.47380 are not significant. B.47380 gave the best juice followed by B.47419, B.37161 and B.4738. B.37161 had juice of the highest purity, followed by B.47380, B.47419 and B.4738. B.4744 had the largest number of rotten canes.

Considering the mean yields over the two trials, B.4744 has given the heaviest yield of cane followed by B.4738, B.37161, B.47419 and B.47380. B.4744 has also given the heaviest yield of sugar followed by B.4738, B.47419, B.37161 and B.47380. The last four mentioned varieties show little difference between their sugar yields over the two crops. B.47380 had, by far, the best juice followed by B.47419, B.4744 and B.37161. There was little difference between the numbers of rotten canes found in the various varieties.

Table XXVIII

Soil Type:—Group IV(b)—Select Seedling Trials—Second Ratoons
Bulkeley: Cut — 22nd April, 1955

Variety	Tons Cane per Acre				Tons Sugar per Acre				% Sucrose in Cane				Purity				No. of Rotten Canes per Plot			
	Plant Canes	1st Rtns.	2nd Rtns.	Mean	Plant Canes	1st Rtns.	2nd Rtns.	Mean	Plant Canes	1st Rtns.	2nd Rtns.	Mean	Plant Canes	1st Rtns.	2nd Rtns.	Mean	Plant Canes	1st Rtns.	2nd Rtns.	Mean
B.37161	40.09	38.92	27.14	35.38	5.62	6.33	4.15	5.37	14.0	16.3	16.6	15.6	87.9	92.3	91.8	90.7	15	34	17	22
B.41211	30.65	42.16	29.36	34.06	4.17	6.62	4.03	4.94	13.7	15.7	16.2	15.2	84.6	88.9	85.0	86.2	223	47	33	101
B.45151	34.99	40.67	26.54	34.07	5.54	6.97	4.35	5.62	15.8	17.1	17.8	16.9	87.9	91.8	92.2	90.6	107	40	19	55
B.4744 ...	46.97	41.98	31.71	40.22	6.68	7.03	4.88	6.20	14.7	16.7	17.0	16.1	85.9	91.4	90.6	89.3	30	33	17	27
B.47419	38.90	39.17	24.66	34.24	5.86	6.72	4.00	5.53	15.1	17.2	17.8	16.7	86.0	91.6	91.2	89.6	75	30	18	41

Differences of ± 3.43 tons cane per acre and ± 0.59 tons sugar per acre may be considered significant.

In this trial, B.4744 gave the heaviest yield of second ratoon cane followed by B.41211, B.37161, B.45151 and B.47419. B.4744 significantly outyielded B.37161, B.45151 and B.47419. B.41211 was significantly better than B.47419. The differences between the mean yields of B.4744 and B.41211 and between the mean yields of B.37161, B.45151 and B.47419 cannot be shown to be significant. B.4744 gave the heaviest yield of second ratoon sugar, and significantly outyielded B.37161, B.41211 and B.47419. B.45151 gave the next heaviest yield of second ratoon sugar, but was not significantly better than B.41211, B.37161 and B.47419. B.45151 and B.47419 gave the richest juices followed by B.4744, B.37161 and B.41211. B.45151 had the highest purity and B.41211 the lowest. B.41211 suffered most heavily from rat and weevil borer damage.

Considering the mean yields over the three crops, B.4744 has given the heaviest yield of cane followed by B.37161, B.45151, B.41211 and B.47419. B.4744 gave the heaviest yield of sugar followed by B.45151, B.47419, B.37161 and B.41211. It should be noted, however, that B.41211 and B.45151 and, to a lesser extent B.47419, suffered severe rat and weevil borer damage particularly in the plant cane crop. When this is taken into consideration, the performance of these varieties has not been unsatisfactory.

GENERAL REMARKS AND SUMMARY

In the Third Year Seedling plant cane trials, B.51353 and B.51355 have given heavy yields of cane, very often exceeding those given by B.4744, the new standard variety. However, the juice qualities of these varieties are so poor that they cannot be considered for commercial cultivation. B.5124 and B.51321 have given moderately good yields of cane and have good juices. Their chances of becoming commercial varieties appear to be poor in view of the good showing of B.49119 and B.4744.

In the Third Year Seedling First Ratoon Trials, B.49119 has been outstanding. It has a good juice, good field characters and appears to be an exceptionally powerful ratooner. Its main drawback appears to be its propensity to flower heavily, particularly at the higher elevations. B.50112 has also performed quite well as a ratoon. Unlike B.49119, it does not flower freely even in the higher elevations, but it is recumbent and tends to hold its trash rather firmly. It is bred from B.37161, which it resembles closely in its habit of growth. It has a very good juice, is a powerful ratooner and may find a place in commercial cultivation. None of the other varieties of the B.50′ Series is worthy of mention, although most of them have consistently outyielded the old standard variety, B.37161.

In the Select Seedling First and Second Ratoon Trials, the variety B.4744 has outyielded all others. It is capable of giving heavy yields of cane, has good field characters and a reasonably good juice. It ratoons well in the intermediate and high rainfall areas and on the valley soils. However, it does not grow well under conditions of very low rainfall and has been known to fail to ratoon satisfactorily on the red and grey sands of the St. Peter and St. James area.

B.45151 has given good cane yields in the high and intermediate rainfall areas. It is a medium to thin cane with an excellent juice, good field characters and is a powerful ratooner. It stands up well to drought but is not recommended for the very low rainfall areas, as the individual canes are likely to be exceptionally thin in a dry year. Its cane tonnages do not, as a rule, come up to those of B.4744, particularly as a plant cane, but it appears to be the equal of B.4744 as a producer of sugar.

B.47419 has given some reasonably good yields of cane particularly in the intermediate and high rainfall areas. It stands up to dry conditions better than B.4744, but does not yield well under very dry conditions. It has good field characters and is a powerful ratooner. Its juice quality is average, but as the fibre in cane is relatively low, sucrose in cane is often better than B.4744.

B.41211 is at its best in the low and intermediate rainfall areas where rats are not prevalent. It should only be cut when the crop is ripe, as indicated by a yellowing of the leaves. At its best, B.41211 has a juice which is slightly better than that of B.37161 cut at the same time. Fibre in cane is some 2% lower than in B.37161, which helps to boost the sucrose per cent cane in this variety. It is a very powerful ratooner and has excellent field characters.

B.4738, B.47380 and B.46364 have been tried but their yields are not up to those of the varieties mentioned above. B.47380 has an excellent juice and it was hoped that it might have been useful for early reaping in the high rainfall areas. Sugar yields are, however, too low for this to be recommended.

III. DESPATCH OF SEEDLINGS TO CONTRIBUTING TERRITORIES

Cuttings of the various varieties are listed against the territory to which they were sent:

Jamaica	B.51129, B.5235, B.5277, B.52107, B.52158, B.52162, B.52242, B.52253, B.52256, B.52257, B.52298, B.52306, B.52313, B.52315, B.52316, B.52321, B.52341, B.52371, B.52389 and all of the 290 selections of the B.54′ Series.
Antigua	B.51126, B.51129, B.5213, B.5235, B.52107, B.52144, B.52158, B.52162, B.52178, B.52214, B.52222, B.52256, B.52298, B.52306, B.52315, B.52321, B.52341 and B.52371.
St. Kitts	B.5213, B.5235, B.52107, B.52144, B.52158, B.52162, B.52214, B.52222, B.52256, B.52298, B.52306, B.52315, B.52321, B.52341 and B.52371.
British Guiana & Trinidad	B.5212, B.5213, B.5235, B.5277, B.52107, B.52135, B.52144, B.52158, B.52162, B.52178, B.52184, B.52214, B.52222, B.52242, B.52253, B.52256, B.52257, B.52298, B.52306, B.52315, B.52316, B.52321, B.52341, B.52371 and B.52389.

In addition to the"above, B.52313 was sent to Trinidad and B.42231 and B.46364 to British Guiana.

St. Lucia	B.51341, B.5212 and B.52341.
Guadeloupe	B.4764, B.50109, B.50153, B.5126, B.5178, B.51129, B.51134, B.51183, B.51355, B.51360, B.5235, B.52107, B.52144, B.52158, B.52214, B.52222, B.52242, B.52256, B.52298, B.52306, B.52315, B.52341 and B.52389.

Martinique	B.5212, B.5213, B.5235, B.5277, B.52107, B.52135, B.52144, B.52158, B.52162, B.52178, B.52184, B.52214, B.52222, B.52242, B.52253, B.52256, B.52257, B.52298, B.52306, B.52315, B.52321, B.52341, B.52371 and B.52389.
Venezuela	B.51131.
Dominican Republic ...	B.49119 and B.50377.
St. Vincent	B.45151, B.49119 and B.47258.
Grenada	B.41211.
United States Dept. of Agriculture	B.39254, B.45170, B.45184, B.45211, B.45236 and B.45266.
Canal Zone	B.37172 and B.4362.

In addition to the above, seed of seventeen crosses, which were selected with a view to their progeny possessing a high degree of resistance to mosaic disease, was sent to Jamaica. Similarly, seed of seventeen crosses selected with a view to their progeny being resistant to leaf scald disease was sent to British Guiana. In each case, the number of crosses sent was limited by the exceptionally poor germination which was obtained during the past season.

SPECIAL INVESTIGATIONS

1. Experiments on the Use of Hormones for the Production of Viable Seed in Crosses which do not produce seed under normal conditions.

The following substances were tried in an attempt to produce viable seed in the cross B.47329 x B.603:—

(a) 2:4:5—Trichloro-phenoxy-acetic acid (40 p.p.m. in water)
(b) 2:4—Dichloro-phenoxy-acetic acid (40 p.p.m. in water)
(c) 1—Naphthyl-acetic acid (40 p.p.m. in water)
(d) 2:4:5—Trichloro-phenoxy-propionic acid (40 p.p.m. in water)
(e) 2—Naphthoxy-acetic acid (40 p.p.m. in water)
(f) 2—Naphthoxy-acetic acid (1% in lanolin)
(g) Control

The solutions were sprayed with an atomiser on the female flower every morning prior to pollination, while the lanolin was smeared on the rachis and on the base of a spikelet which had been removed. The seed was allowed to ripen, harvested and sown in the usual way. No seedlings were obtained from the control or any of the treated fuzz.

2. Marcotting

Sphagnum moss, which had been ordered from Trinidad, arrived too late to be of much use in the breeding programme. The canes of three late flowering males were marcotted with sphagnum moss soaked in a hormone solution. It was found that quite appreciable root development had taken place after seven days. Emergence of the arrows appears to have been delayed by the treatment, but as it was very late in the season, other factors might also have been involved. Two crosses were made with late flowering female parents, but no seedlings were obtained. Further trials are to be undertaken during the coming season, for if this method is successful, it may be worth adopting on a considerable scale in the breeding work.

IV. PERFORMANCE OF VARIETIES IN CONTRIBUTING COLONIES

Barbados

Variety per cent acreages to be cut in 1956, with corresponding figures for 1955 are shown below for the major estate varieties:—

	1955	*1956*
B.37161	67.47	64.57
B.41211	12.76	13.05
B.4098	8.25	8.01
B.4744	4.38	6.74
B.45151	1.05	2.56

It will be seen that the small decrease in the dominant variety, B.37161, has been compensated by increased acreages of B.41211, B.4744 and B.45151 for the 1956 reaping. Plantings of the last two varieties during 1955 have been on a considerable scale, and it is expected that the figures for reaping in 1957 will show a more marked trend in the replacement of B.37161 by these newer and more successful varieties. The promising variety, B.49119, was distributed to estates and peasant growers for commercial planting during the year. In variety trials it has given exceptional results as a ratoon, and its performance under commercial conditions should be very satisfactory, though it was noted after the hurricane in September, 1955, that considerable damage was done through breakage of canes. In the major commercial varieties, damage was less appreciable, but B.4098 suffered some damage thus corroborating experience with this variety under hurricane conditions in Antigua previously.

Trinidad

Overall variety per cent acreage figures for the island in the 1954 and 1955 crops are shown below:—

	1954	*1955*
B.3337	34.02	31.47
B.37172	27.71	30.80
B.37161	20.74	20.59
B.34104	12.46	6.78
B.41227	0.71	3.60
B.4362	1.18	2.72

The main trends that can be distinguished are a rapid replacement of B.34104, mainly by B.37172 and B.41227, a slight reduction in the percentage of B.3337, and the maintenance of the B.37161 area at about 20%. These overall figures, however, while of general interest, do not take account of the wide range of environmental conditions in the Trinidad cane areas. For instance, in the south, B.37161 is reported to represent about 43% of the plantings, while on the heavier soils of the midland basin it occupies less than 1% of the acreage.

Jamaica

Variety per cent figures for the 1954 and 1955 crops were as follows:—

	1954	*1955*
B.34104	26.47	16
B.3439	17.95	13
B.41227	10.01	18
B.4362	9.68	14
B.37161	8.43	8
B.37172	7.90	7
B.42231	6.81	10

The replacement of B.34104 by varieties resistant to mosaic and of good agricultural characteristics is continuing rapidly. On the north coast, B.41227 is outstanding both in plants and in ratoons, while B.4362 and B.42231 also give good results. On the wet east coast estates, B.4362 gives better results than B.37172, hitherto the standard variety for some years. The central estates are dominated by B.4362 and B.41227, the former being outstanding in plants and the latter in ratoons. On irrigated estates, the best of the newer varieties are B.41227, B.42231 and B.4362, and of the older standard varieties, B.37161 gives the best results. B.41227 is outstanding, with good juice qualities when reaped in March, April and May. B.42231 also gives good results, particularly in ratoons.

British Guiana

The leading estate variety is B.41227, though for the 1955 crop there was only a small increase over the 1954 figure. The most popular variety, as indicated by the large increase in percentage to be reaped, is B.37161, which is rapidly replacing the leaf scald-susceptible B.34104. B.4098 and B.4362 are diminishing in popularity Variety per cent figures for the 1954 and 1955 crops are shown below:—

	1954	*1955*
B.41227	30.5	33.6
B.37161	18.9	30.3
B.34104	31.0	13.2
B.4098	9.2	9.9
B.4362	2.0	4.4

Antigua

Returns from Antigua show that the dominance of B.4098 has been further increased, so that now the island is virtually dependent on this variety. B.37161 has fallen sharply in popularity, and now accounts for less than 3% of the area reaped. Figures for the 1954 and 1955 crops are as follows:—

	1954	1955
B.4098	83.54	95.85
B.37161	11.31	2.63
B.3439	2.19	0.68
B.37172	2.08	0.41
B.34104	0.83	0.32

St. Kitts

For the 1954 and 1955 crops, variety per cent acreage figures were as follows:—

	1954	1955
B.37161	69.20	59.61
B.41211	19.89	26.24
B.34104	5.34	5.42
B.3337	2.45	2.85

B.41211 is replacing B.37161, mainly on the lower and middle lands, though the latter has maintained its popularity on the upper lands on account of its excellent ratooning ability.

Of the newer varieties which are not yet grown on a large scale, B.45151 has outyielded B.37161 in the wet middle lands, and shows promise under such conditions, while B.4744 has given good results in all areas, frequently being superior to B.37161 and B.41211. It is reported, however, to show a tendency to lodging and uprooting which might limit its popularity on some estates unless a different cultivation system can be evolved.

St. Lucia

For 1955, the island variety per cent acreage figures are shown below, together with those for 1953 to indicate the trend in popularity:—

	1953	1955
B.37172	23.3	38.1
B.37161	38.7	35.7
B.4362	16.5	12.0
B.H.10(12)	11.1	5.7
B.4098	5.1	3.9
B.41227	1.0	1.1

It will be seen that the main increase has been in the proportion of B.37172. While B.37161 has maintained its position, B.4362, B.H.10(12) and B.4098 have all decreased in popularity and now represent only insignificant proportions of the area reaped.

V. PROGRESS REPORT ON CYTOGENETICS RESEARCH FOR THE PERIOD 1ST OCTOBER, 1954 TO 30TH SEPTEMBER, 1955

General

The Cytogeneticist was on vacation leave in the United Kingdom until the end of January, 1955, and, on his return, assumed the duties of his new appointment as Senior Geneticist in charge of the experimental and research work at the Station. As a consequence, there was little opportunity during the year for uninterrupted work in the laboratory.

Pure-line Breeding

During the breeding season of 1954, a full programme of selfing, sib-crossing and back-crossing was possible. Although a few of the derivatives proved self-sterile, the majority yielded good seedling populations, and 2,200 selfs and close inbreds were planted in the field nursery. Fertility in some of the third-generation selfings was higher than in any out-crosses in the general breeding programme. This is indicative of some degree of homozygosity in respect of fertility factors, and is to be expected on theoretical grounds. Highest fertility was found in the lines developed from B.4098, B.41211 and B.37161.

Selections from the field nursery of the previous series were made in December, 1954, at which time sixty-one were allocated to the breeding plots at Groves, where 164 selfs and close inbreds are available for use in the 1955 breeding season.

Readings of juice quality by means of the Hand Refractometer, which have been made annually since 1952, were taken in March. Second-generation selfs included a satisfactory proportion showing good juice quality, and further selfing of these has already been carried out.

A preliminary consignment of 55 clones was sent to Jamaica in March for mosaic disease resistance testing. By October, information was received that only five of these had developed mosaic symptoms, but further periodic observations are necessary before reliable mosaic resistance data can be established.

Inbreeding

The main emphasis in the general breeding programme in Barbados has always been on out-breeding. When the parent varieties were predominantly noble canes, the experience was that any appreciable degree of inbreeding resulted in a loss of vigour in the seedling populations. The explanation for this was in the fact that these noble varieties were themselves inbred to some extent during the development of the five "lines" of Barbados noble varieties recognized by McIntosh, so that crossing between lines gave more vigourous seedlings than crossing within any one line. Since the general use of nobilised varieties as parents, spectacular results have been obtained, and although the policy of outcrossing was generally maintained, little serious consideration was given to the relative merits of outcrossing and inbreeding with these interspecific hybrids until investigational work on cytogenetics was begun in 1949. Since that time, thousands of inbred seedlings have been raised in different lines, and a study of these, together with consideration of the genetical principles involved, has led to the conclusion that planned inbreeding should be used extensively in the general breeding programme. Its value is recognized in Australia and in Hawaii. Moreover, the success of the new Barbados seedling B.49119, which is closely inbred, supports the theoretical considerations. Accordingly, the provisional breeding programme for 1955, which was drawn up in July, includes a large number of inbred-crosses, the seedlings from which will be subjected to the normal selection procedure along with the remainder of the populations which will be, as before, from out-crosses.

Laboratory Work

Chromosome numbers were established for several locally bred and imported varieties, using the 2-bromonaphthaline technique for shrinking and spreading metaphase chromosomes. Interesting counts were for *S. spontaneum* Tukuyu No 2, a giant form from Tanganyika, which has 120 chromosomes—the highest for any *spontaneum* form yet counted—and for C.P. 36–116, which was originally introduced

as an *Erianthus arundinaceus* hybrid from the cross Louisiana Purple x 28 NG.7. The chromosome number proved to be 80, however, indicating the variety is not from the supposed cross but from a selfing or a cross between Louisiana Purple and another noble variety. Numbers for other foreign varieties are: Ajax 80, M.134/32 97, P.R.1000 119, and H.32–8560 120. The last two high-chromosome varieties have already been used in crosses with Barbados varieties.

In connection with the pure-line breeding work, a number of chromosome counts were made for derivatives in different lines. In all, thirty-two determinations have been made for selfs and close inbreds. Findings in general have corroborated the theoretical conclusion that meiotic stability in this hybrid material would not be established until after several generations of selfing.

Stem epidermis preparations were made for several locally bred and imported varieties, as well as for selfs and inbreds: These were added to the collection maintained for study and for use in variety identification.

Coloured drawings and botanical and agricultural descriptions were prepared for varieties introduced into commercial cultivation. These will be used, it is hoped, when sufficient are available to publish a second bulletin on the Barbados sugar cane varieties.

Visits

Apart from visits to various institutions in the United Kingdom while on vacation leave, the Senior Geneticist visited British Guiana in April to make recommendations on methods of seedling testing there and to see work in progress on the testing of sugar cane varieties for Leaf Scald resistance.

Publications

A report on the visit to British Guiana was prepared and circulated.

A paper on sugar cane breeding with particular reference to the development of high sucrose varieties was written and submitted for presentation at the International Society of Sugar Cane Technologists' Congress in India early in 1956.

At the B.W.I. Sugar Technologists' Conference in November 1955, a paper on variety improvement was presented. In this, an attempt is made to review past achievements, to state the present position, and to examine the possibilities for variety improvement in the future.

VI. STATEMENT OF EXPENDITURE FOR *1954 — 55*

1.	**Recurrent**		
	1. Personal Emoluments		$ 17,570.35
	2. Provident Fund		986.40
	3. Seedling Trials		21,876.61
	4. Stationery and Library...		727.00
	5. Travelling		3,154.14
	6. Rent of Land		598.50
	7. Incidentals		927.97
	8. Rent of House for Senior Geneticist—February to September 1955		1,060.00
			$ 46,900.97
2.	**Non-Recurrent**		
	Irrigation	$ 165.87	
	Arrow Lanterns...	84.67	
	Preparing lease *re* House	54.80	
	Advertisement *re* lease for House	11.59	
		$ 316.93	316.93
	Total		$ 47,217.90

APPENDIX I

SUGAR CANE BREEDING, SEEDLING RAISING AND FIELD NURSERY PLANTING — B.57′ SERIES

Details of Crosses made, their Germinations, Numbers Potted and Numbers Planted in the Field Nursery

CROSS	GROUP	No. Germinated	No. Potted		No. Planted in Field Nursery	
			Singles	Bunches	Singles	Bunches
	S. officinarum x S. spontaneum					
Ba.11569 x Tukuyu No.2	1st Nobilisation Tukuyu	4	4	—	—	—
Tukuyu No.2 x B.2935	,, ,, ,, ...	—	—	—	—	—
B.49282 x B.603 ...	3rd Nobilisation Glagah	15	15	—	11	—
Ba.11569 x C.270 ...	3rd Nobilisation Local	30	30	—	17	—
Ba.11569 x B.5126 ...	Noble x Local x Glagah	10	10	—	4	—
B.37172 x B.41211	,, x ,, x ,, ...	61	61	—	38	—
B.4145 x B.41211	,, x ,, x ,, ...	420	350	5	180	5
Co.421 x B.41211	,, x ,, x ,, ...	4,000	700	760	587	755
B.47179 x P.O.J.2878	Noble x Glagah x Celebes	121	121	—	84	—
B.37172 x B.46364	Noble x Glagah x Celebes	66	66	—	38	—
B.43349 x B.5301 ...	Noble x Local x Glagah x Celebes ...	215	215	—	156	—
B.4642 x B.41211	,, x ,, x ,, x ,, ...	—	—	—	—	—
Co.421 x B.39156	,, x ,, x ,, x ,, ...	1,500	180	266	165	266
		6,442	1,752	1,031	1,280	1,026
	S. officinarum x S. spontaneum x S. barberi					
Ba.11569 x B.45111	Noble x Glagah x Chunnee	6	5	—	—	—
B.35207 x P.O.J.2878	,, x ,, x ,, ...	700	700	—	574	—
B.37161 x P.O.J.2878	,, x ,, x ,, ...	31	31	—	30	—
B.4362 x B.39220	,, x ,, x ,, ...	193	75	25	60	22
B.50184 x B.46136	,, x ,, x ,, ...	99	99	—	65	—
Ba.11569 x Co.313 ...	Noble x Local x Chunnee	130	130	—	38	—
H.32–8560 x B.603 ...	,, x ,, x ,, ...	—	—	—	—	—
B.3365 x Co.331 ...	,, x ,, x ,, ...	340	250	13	222	13
Co.413 x Ba.6032	,, x ,, x ,, ...	30	30	—	18	—
Ba.11569 x N.Co.310	Noble x Local x Glagah x Chunnee	100	100	—	62	—
Ba.11569 x N.Co.330	,, x ,, x ,, x ,,	—	—	—	—	—
Ba.11569 x C.P.44/55	,, x ,, x ,, x ,,	20	20	—	17	—
B.3365 x B.4738 ...	,, x ,, x ,, x ,,	180	180	—	136	—
B.35207 x N.Co.330	,, x ,, x ,, x ,,	6	5	—	5	—
B.37161 x B.4098 ...	,, x ,, x ,, x ,,	60	60	—	55	—
B.40105 x P.O.J.2878	,, x ,, x ,, x ,,	47	47	—	27	—
B.40105 x B.46136	,, x ,, x ,, x ,,	9	9	—	6	—
B.4362 x B.4098 ...	,, x ,, x ,, x ,,	320	320	—	237	—
B.4362 x B.41227	,, x ,, x ,, x ,,	220	220	—	170	—
B.4362 x B.43235	,, x ,, x ,, x ,,	40	40	—	24	—
B.4362 x B.51321 ...	,, x ,, x ,, x ,,	130	130	—	124	—
B.4362 x Co.419 ...	,, x ,, x ,, x ,,	119	119	—	77	—
B.4362 x C.P.33/224	,, x ,, x ,, x ,,	550	100	85	80	102
B.4373 x B.49119	,, x ,, x ,, x ,,	260	214	5	124	5
B.4596 x B.4744 ...	,, x ,, x ,, x ,,	70	68	—	45	—
B.45170 x B.4098 ...	,, x ,, x ,, x ,,	1,200	200	180	159	179
B.45170 x B.47419	,, x ,, x ,, x ,,	700	100	170	87	170
B.45170 x P.O.J.2878	,, x ,, x ,, x ,,	800	100	135	68	130
B.46103 x B.41227	,, x ,, x ,, x ,,	96	96	—	85	—
B.46288 x B.42231	,, x ,, x ,, x ,,	350	350	—	225	—
B.4726 x B.4409 ...	,, x ,, x ,, x ,,	—	—	—	—	—
B.5011 x B.47419	,, x ,, x ,, x ,,	1,200	200	230	163	210
B.5012 x B.4738 ...	,, x ,, x ,, x ,,	33	33	—	24	—
B.5037 x B.42231	,, x ,, x ,, x ,,	228	228	—	140	—

APPENDIX I.—*(Continued)*

CROSS	GROUP	No. Germinated	No. Potted		No. Planted in Field Nursery	
			Singles	Bunches	Singles	Bunches
B.5037 x B.4534 ...	Noble x Local x Glagah x Chunnee	140	140	—	111	—
B.5041 x B.4744 ...	,, x ,, x ,, x ,,	800	150	200	156	145
B.5142 x B.4098 ...	,, x ,, x ,, x ,,	41	41	—	18	—
B.51190 x B.4098 ...	,, x ,, x ,, x ,,	170	170	—	117	—
B.51131 x B.4098 ...	,, x ,, x ,, x ,,	143	143	—	72	—
B.51311 x B.4738 ...	,, x ,, x ,, x ,,	8	8	—	7	—
H.32–8560 x B.4098 ...	,, x ,, x ,, x ,,	240	220	—	138	—
Co.421 B.4098 ...	,, x ,, x ,, x ,,	—	—	—	—	—
Co.421 ... x B.47419	,, x ,, x ,, x ,,	1,300	100	300	97	297
P.O.J.2878 x B.34104	,, x ,, x ,, x ,,	80	80	—	38	—
P.O.J.3016 x B.4098 ...	,, x ,, x ,, x ,,	219	219	—	133	—
N.Co.79 x B.603 ...	,, x ,, x ,, x ,,	9	9	—	7	—
Pepe Cuca x B.391 ...	,, x ,, x ,, x ,,	6	6	—	6	—
M.134/32 x B.4098 ...	,, x ,, x ,, x ,,	—	—	—	—	—
P.R.1000 x B.4098 ...	,, x ,, x ,, x ,,	6.000	75	1,200	58	1,123
P.R.1000 x B.41227	,, x ,, x ,, x ,,	480	480	—	450	—
F.36/819 x Ba.6032	,, x ,, x ,, x ,,	90	90	—	56	—
B.43380 x B.603 ...	Noble x Local x Celebes x Chunnee...	—	—	—	—	—
B.4145 x B.43290	Noble x Local x Glagah x Celebes x Chunnee	154	154	—	103	—
B.43283 x B.41227	Noble x Local x Glagah x Celebes x Chunnee	*All seed*	*sent to*	*Jamaica.*		
B.43283 x P.O.J.2878	Noble x Local x Glagah x Celebes x Chunnee	220	220	—	143	—
B.43349 x B.47320	Noble x Local x Glagah x Celebes x Chunnee	4,000	250	285	122	282
B.43380 x B.51122	Noble x Local x Glagah x Celebes x Chunnee	41	41	—	31	—
B.46103 x B.50377	Noble x Local x Glagah x Celebes x Chunnee	26	26	—	17	—
B.4970 x B.4098 ...	Noble x Local x Glagah x Celebes x Chunnee	60	59	—	42	—
B.5082 x B.4738 ...	Noble x Local x Glagah x Celebes x Chunnee	—	—	—	—	—
B.50196 x B.4098	Noble x Local x Glagah x Celebes x Chunnee	50	50	—	36	—
B.50196 x B.47419	Noble x Local x Glagah x Celebes x Chunnee	1,500	250	350	215	337
B.50210 x B.4098 ...	Noble x Local x Glagah x Celebes x Chunnee	350	250	30	216	28
B.50370 x B.4098 ...	Noble x Local x Glagah x Celebes x Chunnee	800	250	70	218	68
		25,194	7,740	3,278	5,754	3,111
	S. officinarum x S. spontaneum x S. barberi x S. sinense					
B.35207 x B.45151	Noble x Local x Chunnee x Sinense	250	200	5	178	5
B.39254 x B.34104	,, x ,, x ,, x ,,	—	—	—	—	—
B.47329 x B.603 ...	,, x ,, x ,, x ,,	—	—	—	—	—
Ba.11569 x B.45116	Noble x Glagah x Chunnee x Sinense	22	22	—	12	—
B.39254 x B.41227	,, x ,, x ,, x ,,	27	27	—	23	—
B.50352 x B.46136	,, x ,, x ,, x ,,	7	7	—	6	—
B.5188 x B.41227	,, x ,, x ,, x ,,	10	10	—	7	—
B.39254 x B.50377	Noble x Local x Glagah x Celebes x Chunnee x Sinense	25	25	—	24	—

APPENDIX I.—(*Concluded*)

CROSS		GROUP	No. Germinated	No. Potted		No. Planted in Field Nursery	
				Singles	Bunches	Singles	Bunches
B.45152	x B.50377	Noble x Local x Glagah x Celebes x Chunnee x Sinense	12	12	—	11	—
B.3439	x B.45151	Noble x Local x Glagah x Chunnee x Sinense	1,200	415	185	319	183
B.4362	x B.50340	Noble x Local x Glagah x Chunnee x Sinense	1,259	1,259	—	652	—
B.44111	x B.41227	Noble x Local x Glagah x Chunnee x Sinense	280	259	—	196	—
B.44182	x B.45151	Noble x Local x Glagah x Chunnee x Sinense	316	316	—	190	—
B.44341	x B.4098 ...	Noble x Local x Glagah x Chunnee x Sinense	5	5	—	—	—
B.45152	x B.4747 ...	Noble x Local x Glagah x Chunnee x Sinense	36	36	—	30	—
B.45152	x B.48392	Noble x Local x Glagah x Chunnee x Sinense	232	232	—	160	—
B.45152	x B.5047 ...	Noble x Local x Glagah x Chunnee x Sinense	25	25	—	18	—
B.45154	x B.49119	Noble x Local x Glagah x Chunnee x Sinense	3,200	200	780	182	765
B.47399	x B.4098 ...	Noble x Local x Glagah x Chunnee x Sinense	—	—	—	—	—
B.49372	x B.45151	Noble x Local x Glagah x Chunnee x Sinense	700	240	138	220	135
B.5061	x B.4098 ...	Noble x Local x Glagah x Chunnee x Sinense	600	220	70	208	69
B.50146	x B.4744 ...	Noble x Local x Glagah x Chunnee x Sinense	20	19	—	14	—
			8,226	3,529	1,178	2,450	1,157
		S. officinarum x S. spontaneum x S. sinense					
Ba.11569	x B.35276	Noble x Glagah x Sinense	—	—	—	—	—
Ba.11569	x B.51148	,, x ,, x ,, ...	—	—	—	—	—
B.39254	x P.O.J. 2878	,, x ,, x ,, ...	5	5	—	—	—
			5	5	—	—	—
		S. officinarum x S. barberi x S. robustum x S. spontaneum					
B.49170	x B.603 ...	Noble x Glagah x Chunnee x Robustum	400	290	16	259	16
		S. officinarum x S. spontaneum x S. robustum					
B.4455	x B.603 ...	Noble x Glagah x Robustum ...	260	200	9	193	9
B.47155	x B.603 ...	Noble x Celebes x Robustum ...	280	280	—	230	—
B.47324	x B.603 ...	Noble x Local x Glagah x Robustum	47	47	—	42	—
			587	527	9	465	9
		Position Uncertain at Present					
Ba.11569	x C.P.38/34		—	—	—	—	—
B.45152	x C.P.43/64		117	117	—	57	—
			117	117	—	57	—
		GRAND TOTALS	40,971	13,960	5,512	10,265	5,319

APPENDIX II.

SUGAR CANE FIRST YEAR SEEDLINGS—B.56′ SERIES

List of Crosses and the Number of Seedlings Planted in the Field Nursery (May 1954) in the First Year Seedling Trial (October 1954)

CROSS	GROUP	No. Planted in Field Nursery		No. Planted First Year Seedling Trial
		Singles	Bunches	
	S. officinarum x S. spontaneum			
Ba.11569 x B.44131 ...	2nd Nobilisation Glagah ...	44	—	8
B.44130 x B.603 ...	,, ,, ,, ...	116	—	14
B.44132 x B.603 ...	,, ,, ,, ...	149	—	8
B.3439 x B.3337 ...	3rd Nobilisation Glagah ...	540	—	69
B.48361 x B.391 ...	,, ,, ,, ...	58	—	17
B.4145 x P.O.J.2878	4th Nobilisation Glagah ...	92	—	40
B.38212 x P.O.J.2878 ...	,, ,, ,, ...	300	—	67
Ba.11569 x B.48392 ...	Noble x Glagah x Local ...	90	—	40
B.37172 x B.41211 ...	,, x ,, x ,, ...	102	—	42
B.4196 x B.37254 ...	,, x ,, x ,, ...	14	—	—
Co.421 x B.41211 ...	,, x ,, z ,, ...	326	800	290
B.3439 x B.48394 ...	Noble x Glagah x Local x Celebes	150	—	21
Co.421 x B.39156 ...	,, x ,, x ,, ...	320	—	46
		2,301	800	662
	S. officinarum x spontaneum x S. barberi			
Ba.11569 x B.4362 ...	Noble x Glagah x Chunee ...	138	—	7
B.3439 x B.4362 ...	,, x ,, x ,, ...	37	—	11
B.35207 x P.O.J.2878 ...	,, x ,, x ,, ...	178	—	61
B.37161 x P.O.J.2878 ...	,, x ,, x ,, ...	83	—	21
B.4145 x B.4362 ...	,, x ,, x ,, ...	100	—	20
B.4362 x B.41227 ...	,, x ,, x ,, ...	180	—	70
B.4547 x B.603 ...	,, x ,, x ,, ...	36	—	12
Ba.11569 x B.47419 ...	Noble x Glagah Local x Chunnee	113	—	22
B.3353 x B.4744 ...	,, x ,, x ,, ...	41	—	15
B.3353 x B.47419 ...	,, x ,, x ,, ...	399	350	149
B.3365 x B.47419 ...	,, x ,, x ,, ...	150	250	91
B.3365 x Co.421 ...	,, x ,, x ,, ...	140	—	30
B.3439 x B.45236 ...	,, x ,, x ,, ...	150	240	104
B.34102 x B.47419 ...	,, x ,, x ,, ...	150	800	296
B.35206 x B.4098 ...	,, x ,, x ,, ...	150	400	50
B.37161 x B.4098 ...	,, x ,, x ,, ...	200	177	119
B.37161 x B.48259 ...	,, x ,, x ,, ...	150	—	30
B.37161 x B.48372 ...	,, x ,, x ,, ...	200	—	34
B.37161 x B.4905 ...	,, x ,, x ,, ...	200	—	60
B.37161 x B.4995 ...	,, x ,, x ,, ...	29	—	3
B.37172 x B.4744 ...	,, x ,, x ,, ...	30	—	7
B.4145 x B.4788 ...	,, x ,, x ,, ...	330	390	203
B.4145 x B.48259 ...	,, x ,, x ,, ...	200	—	46
B.4145 x B.50382 ...	,, x ,, x ,, ...	27	—	8
B.42279 x B.47419 ...	,, x ,, x ,, ...	299	—	38
B.42304 x B.4098 ...	,, x ,, x ,, ...	250	370	89
B.42304 x B.47419 ...	,, x ,, x ,, ...	150	900	88
B.4362 x B.38192 ...	,, x ,, x ,, ...	90	—	27

APPENDIX II.—*Continued.*

SUGAR CANE FIRST YEAR SEEDLINGS—B.56 SERIES

List of Crosses and the Number of Seedlings Planted in the Field Nursery (May 1954) in the First Year Seedling Trial (October 1954)

CROSS	GROUP	No. Planted in Field Nursery		No. Planted First Year Seedling Trial
		Singles	Bunches	
B.4362 x B.4098 ...	Noble x Glagah x Local x Chunnee	200	—	43
B.4362 x B.49397 ...	,, x ,, x ,, ...	37	—	16
B.4362 x Co.290 ...	,, x ,, x x ...	119	—	16
B.43358 x B.47419 ...	,, x ,, x ,, ...	100	—	11
B.4502 x B.47419 ...	,, x ,, x ,, ...	200	—	63
B.4052 x P.O.J.2878	,, x ,, x ,, ...	252	—	52
B.4558 x B.4098 ...	,, x ,, x ,, ...	47	—	10
B.45104 x P.O.J.2878	,, x ,, x ,, ...	123	—	45
B.45117 x B.4744 ...	,, x ,, x ,, ...	165	—	12
B.45117 x B.47419 ...	,, x ,, x ,, ...	150	—	19
B.45121 x P.O.J.2878	,, x ,, x ,, ...	60	—	15
B.45170 x P.O.J.2878	,, x ,, x ,, ...	72	—	12
B.45170 x B.4744 ...	,, x ,, x ,, ...	250	—	20
B.46103 x B.4098 ...	,, x ,, x ,, ...	48	—	18
B.46199 x B.47419 ...	,, x ,, x ,, ...	14	—	8
B.4733 x B.39220 ...	,, x ,, x ,, ...	130	—	16
B.47419 x Self ...	,, x ,, x ,, ...	46	—	—
B.4881 x B.4098 ...	,, x ,, x ,, ...	299	150	138
B.48330 x B.46136 ...	,, x ,, x ,, ...	200	—	43
B.49353 x B.34104 ...	,, x ,, x ,, ...	135	—	10
Co.421 x B.37193 ...	,, x ,, x ,, ...	451	—	46
Co.421 x B.4098 ...	,, x ,, x ,, ...	77	263	128
Co.421 x B.40102 ...	,, x ,, x ,, ...	250	—	64
Co.421 x B.4381 ...	,, x ,, x ,, ...	37	—	4
Co.421 x B.47419 ...	,, x ,, x ,, ...	380	350	108
P.O.J.2878 x B.34104 ...	,, x ,, x ,, ...	242	—	34
S.45 x B.41227 ...	,, x ,, x ,, ...	150	—	32
B.37161 x B.39274 ...	Noble x Chunnee x Celebes	24	—	4
Ba.11569 x B.49380 ...	Noble x Glagah x Celebes x Chunnee	22	—	7
B.37161 x B.43337 ...	,, x ,, x ,, ...	163	—	18
B.3439 x B.43375 ...	Noble x Glagah x Local x Celebes x Chunnee	420	—	111
B.35247 x B.42231 ...	,, x ,, x ,, ...	154	—	24
B.43283 x B.41227 ...	,, x ,, x ,, ...	200	150	84
B.43349 x B.47320 ...	,, x ,, x ,, ...	93	700	329
Co.421 x B.43375 ...	,, x ,, x ,, ...	330	407	151
		9,840	5,837	3,422
	S. officinarum x S. spontaneum x S. barberi x S. sinense			
B.39254 x B.34104 ...	Noble x Local x Chunnee x Sinense	104	—	14
B.39254 x B.4744 ...	Noble x Glagah x Local x Chunnee x Sinense	75	—	19
B.39254 x B.47306 ...	,, x ,, x ,,	130	—	27
B.44111 x B.4098 ...	,, x ,, x ,,	40	—	11
B.44305 x B.4098 ...	,, x ,, x ,,	100	—	17
B.45220 x B.47419 ...	,, x ,, x ,,	170	50	60
B.51244 x B.34104 ...	,, x ,, x ,,	148	—	36
B.47183 x B.46136 ...	Noble x Glagah x Celebes x Chunnee x Sinense	146	—	25
		913	50	209

APPENDIX II.—*Concluded.*

SUGAR CANE FIRST YEAR SEEDLINGS—B.56 SERIES

List of Crosses and the Number of Seedlings Planted in the Field Nursery (May 1954) in the First Year Seedling Trial (October 1954)

CROSS	GROUP	No. Planted in Field Nursery		No. Planted in First Year Seedlings Trial
		Singles	Bunches	
	S. officinarum x S. spontaneum x S. robustum			
B.4455 x B.602 ...	Noble x Glagah x Robustum	100	100	30
B.44233 x B.603 ...	,, x ,, x ,,	200	200	73
B.4587 x B.391 ...	,, x ,, x ,,	60	—	9
B.49281 x B.603 ...	,, x ,, x ,,	24	—	5
		384	300	117
	S. officinarum x S. spontaneum x S. barberi x S. robustum			
B.47388 x B.H.10(12)	Noble x Glagah x Local x Chunnee x Robustum	96	—	28
B.35206 x B.47198 ...	,, x x x ,,	150	—	38
		246	—	66
	S. officinarum x S. barberi x S. robustum			
B.45198 x B.603 ...	Noble x Chunnee x Robustum	150	—	22
	Grand Totals ...	13,834	6,987	4,498